

Peer-Reviewed Commentary

Behind the Scenes at JOEH: Questionable Actions Lead to the Publication of an Industry-funded Benzene Exposure Article and Refusal to Publish Letter to the Editor

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Abstract

This Commentary discusses the decision-making and conduct of the Journal of Occupational and Environmental Hygiene (JOEH) and its Editor in Chief (EIC) regarding two versions of a scientifically flawed benzene exposure article published in JOEH.^{1,2} The author of this commentary submitted a letter to the editor concerning an “Accepted” manuscript (AM)¹ published on the JOEH website. JOEH did not publish the letter, but permitted the authors to make at least nine substantive revisions to the AM that were all responsive to Letter 1. The AM was removed from the JOEH website and replaced by a Short Report (SR)² having the same title. Questions of publishing ethics arise as a result of the refusal by JOEH to publish any of my additional Letters to the Editor, submitted between May and December of 2018. JOEH failed to address author conflicts of interest and major analytical testing anomalies that led to scientifically untenable results. Further, JOEH did not require the authors to disclose that 1) all tabulated results were drawn from an unpublished 2017 report prepared by the authors for the study sponsor (CRC Industries), and 2) one of the authors based her testimony on behalf of CRC on the unpublished report in at least two trials. JOEH’s refusal to publish the Letters to the Editor regarding undisclosed conflicts of interests, flawed scientific results, misleading conclusions, and other issues brings up numerous ethical questions.

Introduction

JOEH is the peer-reviewed journal of the American Industrial Hygiene Association (AIHA) and the American Conference of Governmental Industrial Hygienists (ACGIH). This Commentary discusses questionable actions taken by JOEH and its Editor-in-Chief (EIC) in publishing two versions of a scientifically flawed benzene exposure article with undisclosed conflicts of interest, while refusing to publish any of the four Letters to the Editor that I submitted in response to the articles.

Airborne exposures associated with the typical use of an aerosol brake cleaner during vehicle repair work, by Fries, Williams, Ovesen, and Maier, was published first as an “Accepted” manuscript (“AM”) and later as a “Short Report” (“SR”).^{1,2} As I detail herein, JOEH removed the AM from its website soon after online publication and replaced it with the SR, backdating the SR to the same publication date as the AM. The SR reflects numerous changes that were made by the authors, and approved by JOEH, that appear to be responses to my Letter to the Editor that the journal refused to publish. The EIC claimed the differences between the AM and SR consisted of merely two “typesetting” changes to

improve its “clarity,” (App. 2, 6.15.19) and “proofing edits,” (App. 2, 7.20.18). In fact, there are at least nine substantive differences between the AM and SR. JOEH policy is unclear on whether such major changes are standard practice, but their “Instructions for Authors” does state: “When in proof, only necessary corrections such as typographical errors or errors of scientific fact may be submitted by the authors.”³ Unpublished data in the SR, but not the AM, does not conform to requirements for unpublished data and the citing of unpublished sources as set forth in the JOEH “Manuscript Style Guide” and “Instructions for Authors.”^{3,4}

In addition, the Fries et al. article was based on an unpublished report funded by CRC industries as part of the defense against lawsuits claiming that their benzene-containing non-chlorinated Brakleen® brake cleaners were defective products and caused blood cancers.⁵ All results in the AM and SR come from the unpublished report (henceforth “litigation report”). One of the authors, Dr. Williams, referenced the report while serving as an expert witness in benzene exposure lawsuits for CRC, and referenced its results as an expert witness for Ashland, Inc. d/b/a Valvoline.^{6,7,8} Fries et al. neither cited the litigation

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report nor acknowledged that all the results came directly from it. JOEH was aware of undisclosed conflicts of interest throughout the peer review process, but did not require their *full* disclosure in either the AM or SR (App. 2, 7.20.18; 12.14.18).

The need for scientific journals to implement some sort of yardstick in evaluating manuscripts with ties to industry interests is underscored in *Doubt is their Product* by Dr. David Michaels, who was formerly Assistant Secretary of Labor for the Occupational Safety and Health Administration (OSHA).⁹ Dr. Michaels explains that industry-for-hire articles published in peer-reviewed scientific journals are sometimes used in litigation and to influence regulations. The “Tricks of the Trade” chapter of the Michaels book focuses on benzene. It explains that published benzene exposure articles with financial ties to industry can communicate “information bias” and “misclassification of exposure estimates.” The AM and SR are prime examples of the “Tricks of the Trade” discussed by Dr. Michaels. The bias from the authors’ use of the unpublished CRC report for litigious purposes should have alerted JOEH and its EIC of the potential for scientific flaws, misleading conclusions, and undisclosed conflicts of interest.

While much of the communications involve the EIC, it is important to note that the emails summarized in Appendix 2 demonstrate the current President of the JOEH Board of Directors, Dr. Philip Smith, and his predecessor, Dr. Mary O’Reilly, supported the actions and decisions of the EIC (App. 2, 8.9.18; 1.21.19). Dr. Smith would not grant permission for me to provide the AM, which has been removed from the JOEH website, and an unpublished Fries et al. rebuttal to my letter as supplements to this Commentary (App. 2, 1.21.19). In an email expressing his support for the EIC, Dr. Smith counseled that I should “not break the confidentiality of the editorial review process” (App. 2, 1.21.19). However, I was not a peer reviewer and there is no confidentiality attached to the release of my own letters or JOEH’s response to them. I believe that this is an example of publication bias in scientific and medical literature, where transparency is essential.

The Commentary is split into three sections: *JOEH Publishing Decisions*, *Litigation Concerns*, and *Final Decision to Not Publish Letters 3 & 4 and Author Rebuttal*. Appendix 1 addresses the undisclosed conflicts of interest, misleading conclusions, analytical chemistry anomalies, and other scientific flaws in the AM and SR. Appendix 2 is a table intended to make it easier for readers to follow the time line presented in the main text of this Commentary, via emails exchanged and the submission dates of the four unpublished Letters to the Editors and the receipt of an unpublished author rebuttal.

JOEH Publishing Decisions

JOEH allowed Fries et al. to revise the Accepted Manuscript (AM) based on Letter 1, and backdated the Short Report (SR)

On April 19, 2018, the JOEH published the AM on its website along with instructions for citing it. Soon thereafter, I submitted Letter 1 in response to the AM (App. 2). I expected that JOEH would publish Letter 1 and an author rebuttal letter in the same journal issue. JOEH instead sent Letter 1 to Fries et al. and re-published the AM as a Short Report with revisions that addressed my letter, without actually publishing my letter. As of January 25, 2019, the Table of Contents for JOEH Volume 15 Issue 7 still reflected a *backdated* publication date of April 19, 2018 for the online SR. The JOEH website *now* indicates an online publication date of June 20, 2018 for the SR.

Over the course of seven months, between May and December of 2018, I submitted three additional Letters to the Editor. Letters 2 and 3, after the back-dated publication of the SR, responded to substantially reduced word limits and changes imposed by the EIC (discussed later in this commentary). Letter 4 was a revision requested by the EIC, written in response to what the EIC considered a “toned-down” Fries et al. rebuttal letter.

Short Report reflected major revisions to the accepted manuscript

It is common for scientific journals to publish “accepted” manuscripts online in advance of the journal issues in which they appear. Doing so provides fast access to research that has withstood the scrutiny of peer review. As discussed in my Letter 2 and a later June 18, 2018 email to the EIC, the SR reflects at least nine major revisions to the AM, all addressing the concerns relayed in Letter 1. The nine revisions were clearly not “proofing edits” as asserted by the EIC, and did not correct raw data, analytical results, or scientific facts. In essence, JOEH allowed Fries et al. a ‘do over’ of the AM. The authors attempted to correct bad optics relating to misattribution of laboratory accreditation, undisclosed conflicts of interest, and analytical chemistry anomalies in the AM. However, the SR failed to address or correct numerous scientific flaws in the AM that were set forth in Letter 1. The EIC did not allow my letter to the editor to include a discussion of differences between the AM and “final manuscript” (App. 2, 7.20.18). She referred to such a discussion as a “red herring that likely does not strengthen my argument.”

Characterizing the “final manuscript” as a “Short Report” was the first major revision to the AM. It is possible JOEH published the revised AM as a Short Report (rather than as an Article) because, as the EIC recognized in her “From the

Editor” article regarding Short Reports versus technical manuscripts:

Due to the limited scope of these studies [Short Reports], the authors should acknowledge that the findings might apply only to the limited sites/conditions included in the study. Thus, the Short Reports should identify specific conditions that might exist in other operations that were not included in this limited or case study.¹⁰

The second revision was the concession by Fries et al. that ALS Global has no AIHA accreditation for bulk liquid analyses, as I pointed out in my Letter 1. The SR reads as follows, with additions (distinct from AM) marked in bold:

Four samples of each formulation (1 bulk liquid, 3 aerosol cans) were subsequently analyzed by an AIHA-accredited laboratory (ALS Laboratory Group). **Although bulk sample analysis is not part of the AIHA accreditation, the laboratory used the same analytical method and quality control procedures as for the charcoal tube air samples. Specifically, all bulk samples were analyzed** using gas chromatography coupled with a flame ionization detector (GC/FID) prior to the study.

Unfortunately, their wording in the AM left the distinct and inaccurate impression that ALS Global’s AIHA accreditation - which only applied to air sample analyses - extended to bulk sample analyses.

The third revision was the removal of “historical” in describing the particular Brakleen® formulation tested in the 2016 “in-field exposure study.” Fries et al. studied a non-chlorinated brake cleaner that is properly viewed as “historical” since it ostensibly replicated a product (05088) manufactured and sold by CRC from the early 1990s until an unspecified date prior to 2016.⁵ The version of CRC 05088 used in the in-field exposure study was markedly different than the one sold in 2016.¹¹ The fourth revision to the AM only *partially* corrected an undisclosed conflict of interest in the AM concerning Dr. Williams. The authors neglected to disclose Dr. Williams’ utilization of the litigation report – and hence, all the reported results in the AM and SR – as an expert witness for CRC.

In responding to points made in my Letter 1, Fries et al. incorporated into the SR at least five specious and inaccurate additions/unsubstantiated opinions:

- *ALS Global “used the same analytical method and quality control procedures as for the charcoal tube air samples [NIOSH Method 1501].”* This description is at odds with the testing method ALS Global says it used. NIOSH 1501 is not intended to analyze the benzene content of non-chlorinated brake cleaners and other bulk liquids (see Appendix 1).
- *“Bulk sampling results are consistent with the prepared formulations.”* This unreferenced statement does not comport with the benzene content of commercial

grades of toluene (the benzene-containing ingredient of the relevant CRC brake cleaner) (see Appendix 1).

- *“Concentrations of benzene in Formula A are also consistent with current supplier certificates of analysis [COAs] for the main hydrocarbon ingredient (toluene).”* The benzene content of toluene reported in the COAs referred to by Fries et al. (summarized in two of Dr. Williams’s expert reports) was determined by a testing method designed to measure the concentration of xylene isomers in commercial xylene solvents.^{6,7} The test has nothing to do with toluene or benzene (see Appendix 1).
- *Current levels of benzene in toluene “do not necessarily reflect historical levels.”* The authors failed to cite evidence to support this assertion, which is incorrect. In 2010, Ashland’s former lab director testified that the benzene content of toluene has not changed in 40 years (since 1970).¹² The most common refinery process for manufacturing toluene consists of catalytic reforming, followed by extraction to remove aliphatic compounds, and then distillations to separate toluene from benzene and other aromatics.¹³
- *The SR states, “All bulk samples were analyzed using a gas chromatograph equipped with a flame ionization detector (GC/FID; Hewlett Packard 6890; Palo Alto, CA) and a DB-MTBE capillary column (Agilent Technologies; Santa Clara, CA) with temperature programming from 50°C to 155°C prior to the study.”* The AM says only, “an AIHA-accredited laboratory (ALS Laboratory Group) used gas chromatography coupled with a flame ionization detector (GC/FID) prior to the study (Supplemental Table 1).” The gas chromatography equipment that Fries et al. say was used is inappropriate for the analysis of interest (see Appendix 1).

“Ferretting out the truth:” JOEH requirements regarding analytical data

I informed the EIC by email on April 25, 2018 of “serious and well-founded concerns about the scientific merit of the results” in the AM, and offered the opinion that “an analytical chemistry evaluation was not done as part of the JOEH peer review process” (App. 2, 4.25.18). The EIC responded the same day with an email stating that she had contacted the authors about “this important issue,” admitting that she and her peer reviewers “missed the bulk analysis issue” (App. 2, 4.25.18). Appendix 1 calls attention to the fact that Fries et al. report a benzene content of only 1.4 ppm for the brake cleaner of interest, while the bulk analytical testing of the brake cleaners reported in Supplemental Table 1 of the AM and SR fails to account for as much as 7.35% (73,500 ppm) of their chemical content.

The authors do not address the possibility that benzene comprises a portion of the 7.35% of the brake cleaner that is unaccounted for. The EIC stated that: “The authors are required to maintain all documentation for these manuscripts, per publication agreement, for this very purpose, *so I’m glad to use my shoulders to ferret out the truth*” (emphasis added) (App. 2, 4.25.18).

Indeed, JOEH requires authors to retain “all raw data” for “a minimum of 3 years following publication” and to provide the raw data to other investigators.³ This policy is consistent with the EPA requirement for raw data to be memorialized in logs or notebooks.¹⁴ Laboratory records are typically maintained for a period of two to five years.¹⁵ In this instance, the “raw data” would include laboratory records pertaining to the analysis of non-chlorinated brake cleaners specially prepared by CRC as well as the charcoal tube samples gathered during the litigation simulations. According to the same JOEH policy, a) authors “should be willing to provide such information to other investigators interested in reproducing their research” and b) “the EIC may also request [them to] supply this information should the veracity of the data ever be questioned.”³ While the EIC initially committed to “ferreting out the truth” about the analytical data, the data were not released to the public record.

Certificates of Analysis (COAs) contravened JOEH policy

COAs are unpublished documents that are often produced as litigation discovery materials. They are not subjected to peer review and are not properly viewed as surrogate laboratory records. Because COAs are known to be unreliable, verifying their accuracy, which includes independent third party analytical testing of purchased raw materials, is recognized to be essential before COAs are considered reliable.¹⁶ It is also recognized that analytical methods referred to in COAs should be “critically reviewed.”¹⁷ In discussing the sampling and testing of raw materials, the US Food and Drug Administration (FDA) writes, “As a minimum, a complete analysis should be performed at appropriate intervals and compared with COAs. Reliability of COAs should be checked at regular intervals.”¹⁸

COAs are not discussed in the AM. They were introduced in the SR after I criticized the benzene contents reported in the AM. There is no indication that the unidentified COAs alluded to in the SR were verified by the authors, or scrutinized by the assigned JOEH peer reviewers or anyone at JOEH. There are known and serious errors in toluene COA summaries relied upon by Dr. Williams as an expert witness for CRC and other defendants (see Appendix 1).^{6,7,8} I requested an opportunity to review the COAs in an email to

the EIC; however, I received no response to my request (App. 2, 6.20.18).

JOEH policy also discourages authors from using unpublished sources such as COAs:

Use only published, accessible peer reviewed references. Requests for exceptions will be considered by the Editor-in-Chief in unusual cases where they are deemed essential by the author. Extreme care should be taken when citing non-peer reviewed material.⁴

In accordance with their policy, JOEH should a) disclose whether the EIC and/or the assigned peer reviewers scrutinized the unidentified and unpublished toluene COAs discussed in the SR, b) make available any requests made by Fries et al. for an exception to the aforementioned JOEH policy, and c) explain why its policy regarding unpublished data was not enforced in this instance. JOEH should also make the underlying toluene COAs publicly available.

Litigation Concerns

“In Field Exposure Study”

The AM and SR pertain to an August 2016 “in-field exposure study” paid for by CRC Industries. Results from that study were memorialized in a January 2017 unpublished litigation report: *Workplace/Simulation Study of Benzene and Total Hydrocarbon (THC) Exposures Associated with an Aerosol Brake Cleaner* that Fries et. al. prepared for CRC fifteen months before JOEH published the AM.⁵ Fries et al. do not disclose two important facts in the AM and SR that JOEH readers should have been made aware of: 1) all figures and tables in the SR replicated or were based on results in the litigation report (see Appendix 1 for details), and 2) Dr. Williams regularly utilizes those results in litigation; in particular she referenced the litigation report as an expert witness for CRC on at least two occasions prior to publication of the AM.^{6,7} The relevant portion of the disclosure in the SR misleadingly reads:

The in-field exposure study was funded by CRC Industries, Inc., but no financial support or oversight was provided for the preparation of this manuscript and its content was prepared under the authors’ sole discretion. One of the authors (PRDW) has provided litigation support and served as a testifying expert related to benzene exposure assessment, including on behalf of CRC. [...]

An article that has been peer reviewed is a Supreme Court consideration for admitting expert testimony because it adds credibility to testimony given by experts before lay jurors. Just a few days after JOEH published the SR in its August issue, Dr. Williams cited the SR in an expert report she prepared for Ashland Inc. in a benzene exposure lawsuit.⁸ In the interest of full disclosure, I was an expert

witness working on behalf of the plaintiff in the Ashland lawsuit.

The EIC was aware of the litigation activities. She noted that “The authors disclosed their litigation activities throughout the review process, to which the reviewers were aware” (app. 2, 7.20.18) and that “The authors identified to the JOEH of their linkage with the CRC, and reviewers were aware of this during their review” (app. 2, 12.14.18). I also furnished the litigation report and Williams’s expert reports to the EIC (app. 2, 7.5.18).^{6,7} Thus, the JOEH knew about these litigation activities and was aware that Fries et al. conducted no exposure simulations or analytical testing aside from what was done as part of the CRC funded “in-field exposure study.”

“Typical” use is misleading

The title given to the AM and SR is a misnomer because it indicates that the simulations reflected the “typical use of an aerosol brake cleaner.” In this instance, the authors only studied one mechanic in one facility during eight uses of a brake cleaner. The authors then speculate that benzene exposures arising from the use of the non-chlorinated brake cleaners were all “typically” below the analytical detection limit of 0.1 ppm. Fries et al. also opine that benzene exposures are expected to be below the detection limit even under “worst case” conditions, which were not tested or described. The conclusion that these benzene exposures are “typical” is offered absent independent verification and seem based solely on the authors’ *opinion*. JOEH has an unambiguous policy requiring authors to ensure that opinions expressed in their articles are supported by the data.⁴ In the present context, I consider the use of the word typical as litigation friendly.

As discussed in Letter 1, the AM identifies a “paucity of data” concerning benzene exposures arising from the use of aerosolized non-chlorinated brake cleaners, and refers to a “limited dataset on this topic.” The SR contains the same language. Based on these author-acknowledged limitations in the relevant benzene exposure database, my letters to the editor point out that Fries et al.’s proclivity for using “typical” in characterizing exposures is inappropriate and misleading. Underscoring this point, Letters 2 and 3 refer to deposition testimony given by Adam Selisker (a CRC Vice President) that CRC never conducted benzene exposure monitoring during use of Brakleen® products because:

We wouldn’t be able to properly reproduce every possible scenario that a mechanic would encounter. There’s so many environmental conditions that need to be measured in any specific test that if we were to test in one area and come up with the results, they would probably not be meaningful to the next person in another scenario.¹⁷

Based on Mr. Selisker’s sworn testimony, it would seem obvious that CRC Industries does not view it as correct, as Fries et al. did, to characterize uses of its products or ensuing benzene exposures as “typical.”

Given a) Mr. Selisker’s testimony, b) the “paucity” of benzene exposure data discussed by Fries et al., and c) the EIC’s decision to change the AM to a *Short Report*, Fries et al.’s conclusions that a) the simulations themselves reflected “typical” uses of brake cleaners, and b) simulated benzene exposures reported in the AM and SR were “typical” or “worst case” were misleading and unjustified, not to mention useful for litigation. Even though it is erroneous, lawyers and experts can use this conclusion to argue that Brakleen® use is unlikely to cause diseases associated with benzene exposures. Juries might be persuaded that an exposure estimate is wrong or not credible simply because an article that withstood the scrutiny of peer review reported that benzene exposures are almost always so low that they cannot be measured.

Other examples of how the AM and SR could be useful to CRC Industries in benzene exposure litigation include:

- Non-chlorinated brake cleaners prepared for the CRC-funded study by CRC itself reportedly contained only 1.4 ppm benzene; at that level, applicable OSHA rules would not require CRC list benzene as a hazardous ingredient or to provide benzene-specific health warnings and instructions for safe use on Brakleen® labels, Material Safety Data Sheets (MSDSs), and Safety Data Sheets.
- Benzene content of toluene (approximately 3.6 ppm) deduced from reported results for the benzene content of non-chlorinated brake cleaner Blend A are orders of magnitude below expected benzene levels in commercial grades of toluene.^{18,19,20}
- The blends said to have been “spiked” with benzene intimate that because non-chlorinated Brakleen® brake cleaners *could not* have contained more than 1,000 ppm without the addition of pure benzene, Brakleen® labels, MSDSs, and Safety Data Sheets are not required under OSHA rules to communicate benzene-specific warnings. This is an incorrect premise; reference 6 in the AM and SR reports a benzene content well in excess of 9,000 ppm (*more than 6,000-fold higher* than the AM and SR result) for a non-chlorinated brake cleaner formulated with the same constituents as Brakleen® brake cleaners.
- The litigation report discloses that the brake cleaners tested replicated an “historical Brakleen® Brake Parts Cleaner” sold between 1999 and 2011; the AM states that Fries et al. utilized “historical Brakleen®.” Fries et al. deleted “historical Brakleen®” from the AM and replaced it with very different language in the SR: “The

product utilized in the study was a non-chlorinated aerosol Brakleen® Brake Parts Cleaner manufactured by CRC Industries, Inc.” This statement could easily be misconstrued to mean an off-the-shelf brake cleaner from August 2016 was used (having a different composition than the one tested).¹¹

Misleading institutional review board application

Under JOEH policy³ the “in-field exposure study” required an institutional review board (IRB) approval because it involved a human subject (an automobile mechanic). The SR indicates only that the study protocol underwent a formal review and approval by the University of Cincinnati (UOC) IRB. While the actual IRB application prepared by Drs. Maier and Williams was not made publicly available, it was part of the litigation report. Appendix 1 discusses inaccuracies in the *a priori* representations made by Drs. Maier and Williams in their IRB application as well as their inaccurate referencing of the sources they cited.

An attorney representing CRC copied the EIC on his emails to me

After I submitted Letter 1 the EIC requested that I provide JOEH with relevant legal “case documents” (App. 2, 6.15.18). In response to her request, I emailed an attorney representing CRC (Ms. Jennifer Bonneville), copying the EIC, and asked if she objected to my use of case documents that were not marked “confidential.” Ms. Bonneville apparently forwarded my email to Mr. Vic Henry, another attorney for CRC (App. 2, 6.19.18). Mr. Henry copied the EIC in his first email to me, in which he made it appear that I was harassing the lab involved in the “In Field Exposure Study.” As I explained in my email response to Mr. Henry, the fact is I sent one email and made one phone call to the lab (App. 2, 6.19.18). He described my past litigation activities as a reason for my not being allowed to contact CRC: “I ask that you comply with standard ethical rules governing persons who are professional expert witnesses and refrain from any future communications with CRC officers and employees directly.” However, my original email made it clear I was seeking the data for a Letter to the Editor regarding the published article (App. 2, 6.19.18) As I further explained, “that is how the system is supposed to work.” Mr. Henry accused me of “breaches of standard ethical rules governing persons who are professional expert witnesses” (App. 2, 6.19.18). Mr. Henry also copied the EIC on a second email in which he stated that CRC funded the simulations of interest, and that release of the data I requested (presented as results in the AM and SR) for my letter required the consent of his client, CRC. (App. 2, 7.5.18). The EIC’s 2nd decision email, sent two weeks later, refers to my “litigious

relationship with CRC” and expresses her view that “it is not surprising that they are unwilling to share formulations with you” (App. 2, 7.20.18). To be clear, I never requested CRC formulations or proprietary data; I requested underlying laboratory data that would shed light on the results reported in the AM and SR.

Evidence of JOEH bias on legal work: “legal sniff test” and EIC criticism of author

On April 25, 2018 the EIC sent an email to me which stated: “Bad news for you is that I am moving your name to a rather elite list of ‘articles of sensitive topics’, aka ‘the legal sniff test’” (App. 2, 4.25.18). It is not clear what the “legal sniff test” is; however, had JOEH objectively applied such a test to the Fries et al. manuscripts, then 1) the article would have been rejected outright, or 2) one of my letters would have been published along with an author rebuttal letter, or 3) corrigenda would have been required.

The EIC also criticized my involvement in legal cases in her decision emails. For instance, in her first of three decision emails the EIC referred to courts, courtrooms, and my “self-reported legal battles” (App 2, 6.15.18). The EIC’s second of three decision emails referred to my “litigious relationship with CRC” and stated: “It is not surprising they [CRC] are unwilling to share formulations with [me]” (App. 2, 7.20.18). The EIC did not ask me if the aforementioned allegations were accurate. They were inaccurate because, a) since early 2015, I have had no involvement in any matter that concerns CRC, b) I have never requested formulations from CRC, and c) while I did disclose that I work as an expert witness, I did not discuss my expert witness work or “court battles” in any of my letters. Given the reaction of the EIC to the publication of Fries et al., JOEH is not concerned with defense work in litigation, but considers expert opinions expressed on behalf of plaintiffs to be biased.

EIC decision to reject my letter 1 refers to the unspecified International Agency for Research on Cancer (IARC) “activities”

In her first decision email, the EIC insisted my Letter 1 was a “personal attack on the author” (App. 2, 6.15.18). As evidence of this, she pointed to my legal work (discussed in the previous section) and to “IARC activities following the New Solutions (2017).” [sic] The EIC was referring to my commentary that was published in New Solutions, which criticized the Occupational Exposure Section (OES) of the 2012 IARC Benzene Monograph.²¹ My commentary noted that the OES relied upon published sources having obvious ties to industry interests. I note that others have criticized the same section of that IARC Benzene Monograph.^{22,23} I believe the EIC’s reference to “IARC activities” may have concerned a statement posted on the IARC website in lieu

of a letter to the editor of *New Solutions* (which the authors were invited to write, submitted, and later withdrew).²⁴

Final Decision to Not Publish Letters 3 & 4 and Author Rebuttal

Author rebuttal letter

Fries et al. submitted two rebuttal letters that responded to Letter 3. I was only sent the second Fries et al. rebuttal manuscript because the EIC said the first version needed “toning down.”

The EIC stated that my Letter 3 “laid out the concerns fairly clearly” (App. 2, 8.27.18). The EIC offered to publish my Letter 3 and the Fries et al. rebuttal letter *as is* in the March 2019 issue of *JOEH*, provided a) that Fries et al. “toned down” their rebuttal letter, and b) I agreed to not revise my Letter 3 (App. 2, 11.20.18). I rejected her proposal because the “toned down” revision of the Fries et al. rebuttal letter was replete with distortions, ad-hominem attacks, and misleading statements. I informed the EIC that I was “taken aback by the tone” of the Fries et al. rebuttal (App. 2, 11.26.18). The EIC wrote that she was unwilling to “publish a response to a response” and requested that I submit a revision to Letter 3 (App. 2, 11.28.18). Accordingly, I revised Letter 3 and submitted it on December 13th as Letter 4.

As discussed above, *JOEH* knew the authors made extensive use of the litigation report (all results in the AM and SR came directly from it), and that Dr. Williams relied upon it as an expert witness for CRC. The EIC wrote that because *JOEH* did not own the copyright to the litigation report, they could not publish it unless the authors gave written permission. She offered: “Alternatively, I am willing to simply strike the parenthetical sections that reference [the report] in the letter submitted” (App. 2, 8.30.18). It is unclear to me why references to the litigation report would have to be excluded from the letter if the litigation report remained unpublished. As a court document, the litigation report contains no admonitions restricting its use. As all the reported results in the AM and SR came directly from the litigation report, it was both necessary and appropriate for me to place the results presented by Fries et al. under the lens of scientific scrutiny in my letter to the editor.

After I submitted Letter 4, the EIC decision email stated:

This new letter is substantially different from the version which was close to final, with approximately 77% of it changed. After reading through this new letter, I regret that this letter [is] out of scope in responding to the Fries et al. article. There are, once again, statements that are not relevant to the discussion and I am unwilling to proceed further with this letter (App. 2, 12.14.18).

Letter 4 has approximately 400 more words than Letter 3. Throughout the course of writing letters 1-4, I deleted and later reintroduced important information due to word count restrictions imposed by the EIC. These restrictions ranged from 2,000 words (original guidance) to 750, to 1,500, and finally to 1,000. Letter 4, contained 1,614 words. *JOEH* has published letters to the editor in the past containing over 2,000 words.^{25,26,27,28,29,30}

My four letters to the EIC set forth *many* scientific and other concerns that are explained in Appendix 1. In her decision email the EIC incorrectly distilled the many concerns into what she characterized as two “original” “main points of argument” (App. 2, 12.14.18). First, she stated that that Fries et al. clarified that the article was not intended to reflect historical exposures (not correct, as discussed herein and in Appendix 1). Second, she mentioned the question of AIHA accreditation. The EIC formerly characterized the misattribution of AIHA accreditation in the AM as an “important issue” (App. 2, 4.25.18). However, the final decision email embraces a “no harm, no foul” philosophy: “[*JOEH*] readers are probably aware that the AIHA does not have an accreditation process for bulk sample analysis.” There is no basis for this assertion. Many readers and most jurors are not members of AIHA. Neither of these concerns reflected the more problematic scientific issues I raised in my four letters.

Conclusions and Recommendations

Commentaries and Letters to the Editor augment the peer review process by providing important checks and balances that alert readers about scientific errors and undisclosed conflicts of interest in published articles. Without the publication of accurate and respectful Letters to the Editor from knowledgeable individuals, readers are not informed about flawed scientific results, undisclosed conflicts of interests, misleading conclusions, and other issues. I submitted four letters to the editor over a seven-month period. *JOEH* refused to publish any of them even though emails from the EIC do not indicate that she or her assigned peer reviewers disagreed with the numerous analytical chemistry and other scientific issues concerning the SR discussed in this Commentary and explained in Appendix 1, as well as in my letters to the editor (provided as supplements to this commentary).

As noted earlier, the EIC acknowledged, “I wholeheartedly thank you for your thoroughness on this one. Both I and my peer reviewers missed the bulk analysis issue, and I did have some good reviewers on this one” (App. 2, 4.25.18). While the EIC acknowledged her error in this email, there is no evidence that she “ferreted out the truth” about analytical testing as she had committed to do, or that *JOEH* enforced its own rigid requirement that investigators produce

analytical testing records in the three years prior to publication.

The CRC-funded “in-field exposure study” discussed in the AM and SR was not undertaken as an academic exercise to assist industrial hygienists in anticipating benzene exposures arising from non-chlorinated brake cleaners. In my opinion, the unpublished CRC report was prepared for the defense of lawsuits, and intended to be used by experts testifying on behalf of the sponsor, CRC Industries. The SR is much more credible in court than the litigation report since it was published in JOEH, a peer-reviewed journal. This Commentary exposes serious deficiencies and errors in the peer review and editing conducted by JOEH. Appendix 1 further addresses the concerns with the Fries et al. article outlined in the Letters to the Editor.

The EIC acknowledged that she and her assigned peer reviewers were fully cognizant of the links between the authors and CRC throughout the evaluation process. JOEH requires all authors to submit a letter disclosing any potential conflicts of interest, after which the EIC decides what, if any, conflict-of-interest information is to be disclosed in the published manuscript.³ Disclosures in the AM and SR are incomplete and misleading. JOEH may want to make the original Fries et al. disclosure letter publicly available to set the record straight and to clear up the confusion.

The actions described in this Commentary were inappropriate, biased, and antithetical to those expected of a neutral scientific journal and EIC; in my opinion they were also unethical. Because JOEH chose to publish the SR but not my Letter to the Editor, and has not issued corrigenda regarding the SR, the journal bears responsibility for the publication of a misleading and scientifically flawed article that had undisclosed conflicts of interest related to litigation.

Disclosures

I am a voting member of three ASTM Committees, including one (D02) that evaluates analytical methods for determining the properties of petrochemical products (including benzene content). As a chemical engineer, I testify at the request of workers who were exposed to brake cleaners and other benzene-containing products. I have testified opposite Dr. Williams in numerous cases.

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