

## Working Group 2: Improve post-publication corrections



# Recommendations for improving the process of making post-publication corrections

## Executive summary

In this document, we outline key challenges and recommendations for three major contributor groups that interact within the scholarly communication ecosystem to address paper mill concerns, namely journals and publishers, institutions, and third parties who raise paper mill concerns. Cross-cutting themes in these recommendations are the need for:

- i) decisive and timely action,
- ii) improved communication between groups,
- iii) improved understanding of the challenges and processes that impact how different contributor groups work to address large-scale research integrity issues and
- iv) a focus on industry-wide standards to improve how different contributor groups work with one another when raising or responding to paper mill concerns.

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## Scope

This document aims to support journals, publishers, institutions, and third parties meaning, those individuals or entities who raise concerns about paper mills by:

- (i) providing recommendations as to how to improve responses to paper mill cases, and
- (ii) increasing cross-industry understanding about the challenges faced by these contributor groups. We acknowledge that this is only a subset of contributor groups involved in and affected by paper mill cases.

Specific decisions about process, policy, and case outcomes are outside the scope of this document and lie with the journal or publisher responsible for the affected content in line with industry guidance. To support improved cross-industry consistency, we provide an Appendix with recommendations and sample policies pertaining to editorial notes, corrections, expressions of concern, and retractions. See also COPE's guidance on Systematic manipulation of the publication process<sup>1</sup> and supplementary guidance<sup>2</sup> for addressing such concerns.

## Introduction

The scholarly publishing community has seen a rise in large-scale investigations in recent years, and in many cases paper mill content and large-scale peer review integrity issues have evaded detection until after publication. Issues that likely contribute to the recent rise in these cases include pressure to increase institutional prestige; pressure on researchers to publish to secure grants, tenure, promotions, and other career benefits; the opportunity for financial gain; and over-reliance on published research outputs as a metric across all contributor groups. See the statement on incentive/reward systems from United2Act Working Group 5 for more discussion on this topic<sup>3</sup>.

Many individual- and organisation-level efforts are already underway to address the problem of paper mills by awareness raising, developing new screening tools, and strategies taken by research institutions, publishers, funders, and governments<sup>4</sup>. However, to maximise success, it is vital to coordinate these activities. To effectively tackle this systemic problem, we need collaborative action<sup>5</sup> from all involved in raising, investigating, and addressing these root issues. This motivated the formation of United2Act<sup>6</sup>, a cross-industry initiative supported by the STM Association<sup>7</sup> and the Committee on Publication Ethics (COPE)<sup>8</sup> that is dedicated to addressing specific issues associated with paper mills<sup>9</sup> and systematic manipulation of scholarly publishing.

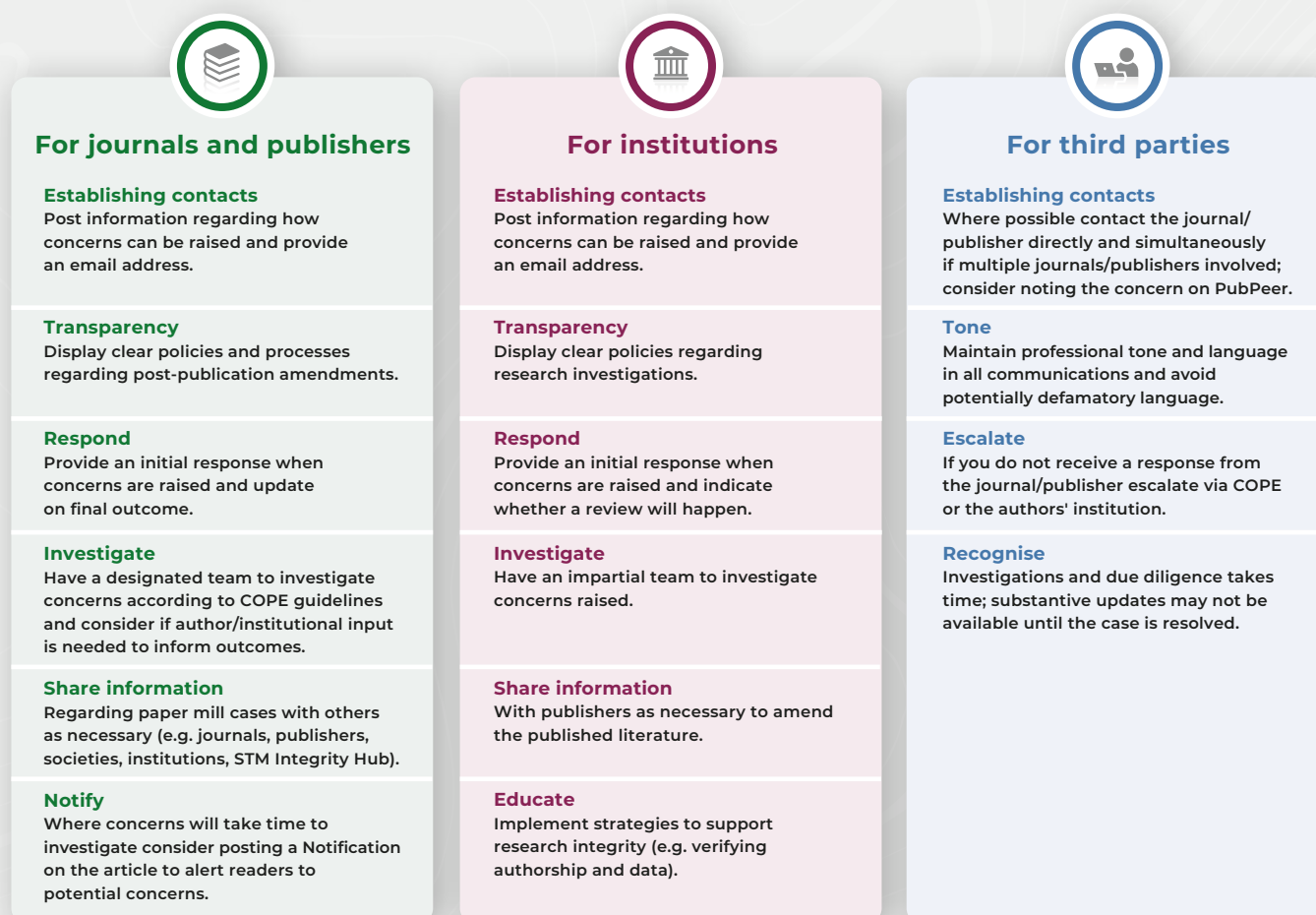
United2Act published a joint Consensus Statement in January 2024<sup>10</sup> outlining key areas of action for five working groups. This document addresses the aim of Working Group 2 to

***“Improve post-publication corrections” that is, “to investigate and agree on ways to improve communication with those who report misconduct to journals, and to agree on ways in which the correction of the literature can be speeded up when misconduct is discovered”.***

In this guidance, we discuss the challenges around communication and post-publication correction in follow-up to paper mill concerns, drawing on the experiences of working group members who represent journals and publishers, institutions (where the research is conducted), and third parties that is, those individuals or entities who raise concerns about paper mill activity. By being transparent about the challenges facing those involved in post-publication correction, we also aim to support the activities of the related United2Act Working Groups<sup>11</sup> particularly Working Group 1 (Education and awareness) and Working Group 5 (Facilitate dialogue between contributor groups). We also provide recommendations for different contributor groups to address specific issues raised in working group discussions.

## Recommendations for all contributors

Recommendations for journals, publishers, institutions, and third parties when making post-publication corrections are outlined below and in this infographic<sup>12</sup> for ease of reference. See also COPE guidance on systematic manipulation of the publication process<sup>1,2</sup> and practical guidance on managing concerns about the integrity of published literature<sup>13</sup>.



## Challenges faced by journals and publishers in addressing paper mill concerns

The challenges faced by journals and publishers are outlined in this accompanying infographic<sup>14</sup> and expanded on in this section here. Journals and publishers addressing paper mill issues often face resourcing constraints and struggle to balance the priorities of providing fair and thorough investigations with timely rectification of confirmed issues<sup>15</sup>. Substantial resources are needed to investigate paper mill concerns. While cases vary considerably, these investigations typically include a deep analysis of 10s to 1000s of articles (including unpublished submissions necessitating urgent prioritisation), and follow-up discussions with all affected authors and journal leads. When investigating paper mill cases, journals and publishers must determine the extent of article-level follow-up required to constitute 'due process', the level of evidence or certainty required to support decisive editorial action (for example Retraction or an Expression of Concern), and the balance between providing sufficient information to communicate the basis for a decision while withholding confidential information that could be used by 'bad actors' to evade journals' integrity checks.

In many cases, authors engage legal counsel to challenge editorial processes or decisions, which places an additional resource burden on the journal/publisher and can substantially prolong case resolution. Such legal threats can be difficult to manage and have negative consequences for other areas of work.

To help address these and other challenges, COPE published practical guidance on addressing concerns about systematic manipulation of the publication process for addressing large-scale cases of systematic manipulation using an adapted approach<sup>2</sup>. An evidence-informed approach can also be helpful<sup>15</sup>.

The time needed to resolve paper mill cases often depends heavily on the interactions with the parties involved, including authors, editors, societies, institutions, subject area experts, and legal counsel. Although efforts can be made to set firm timelines in these discussions, there is often limited scope for a publisher to influence the response time of another party. Geographical relocation and career transitions, which are common in academic research, can introduce additional barriers and complexity, thereby further prolonging the time needed to complete an investigation. Other personal, professional, and political issues can likewise impact a contributor's availability to support these investigations.

While not always required, publishers may seek support from institutions to investigate or resolve an integrity issue. Several guidelines have been published to designate publisher versus institution responsibilities, and to support effective collaboration between these two groups. See, for example, the work of CLUE on cooperation between universities and editors<sup>16</sup>, recommendations from a working group of institutional research integrity officers and journal editors and publishers<sup>17</sup>, and guidance from COPE on cooperation between research institutions and journals on research integrity cases<sup>18</sup> sharing information among editors-in-chief on research integrity and publication misconduct cases<sup>19</sup> and guidance when institutions are contacted by journals<sup>20</sup>.

While institutional investigations can be instrumental in informing the outcome of a publication ethics case, publishers often have difficulties finding contact information or establishing two-way communication with the institutional official responsible for research integrity oversight. If a publisher succeeds in establishing contact with the relevant individual, there can be a further delay due to the time required for an institution to complete a thorough case review and/or investigation<sup>21</sup>. These challenges are amplified in paper mill cases, wherein it may require input from numerous institutions to fully clarify issues that apply across the series of articles. These cases can be further hampered in situations where there are questions regarding author or reviewer identity or fake institutional affiliations. In such cases, it can be impossible to secure reliable institutional input. In cases where an institution appears to be complicit with paper mill activity it would be inappropriate to engage with the institution.

For these and other reasons, the journal or publisher may choose to take action based on the evidence in hand and stipulate a timeframe to authors by which it is reasonable to act to resolve a situation. This has the advantage of providing readers with a more timely notification of problematic content. However, without institutional involvement and intervention, the academic and publishing communities are at higher risk that rejected/retracted problematic content will be submitted to another journal. Each new submission represents a continued threat to the integrity of the published record even after a previously receiving journal has completed an investigation. Furthermore, a journal's investigation and/or sequential iterations of submission and publication may impair an institution's ability to conduct an investigation at a later point, discussed on the next page.



## Challenges faced by institutions

The challenges faced by institutions when responding to paper mill concerns are outlined in this infographic<sup>14</sup> and expanded on in this section. Institutions that support researchers who conduct research are responsible for investigating and resolving any complaints that may arise about the conduct of that research and to complete due follow-up when research misconduct has taken place. This may be the responsibility of a Research Integrity Office or other officials responsible for research oversight at the institution (for example, Vice Chancellor, Dean or Head of Department) who follow due process, using institutional procedures<sup>22</sup> and/or national codes<sup>23</sup> to enforce integrity standards for responsible research practice.

Institutions must also have due regard to confidentiality, transparency, and timeliness in managing concerns. See for example, this guide to managing and investigating potential breaches of the Australia Code for the Responsible Conduct of Research<sup>24</sup>. However, many research institutions around the globe, especially in resource-limited countries, lack formal institutional procedures for investigating misconduct and imposing sanctions which poses a challenge for research integrity with international implications. There can be several steps involved in managing and investigating concerns involving potential research misconduct. Similar to investigations overseen by publishers, cases can vary in complexity and the steps taken to manage a concern are often unique to each case. This can involve preliminary assessment, interviewing relevant parties, securing evidence, and seeking independent expert advice. Where concerns are assessed as serious and potentially constituting research misconduct, institutions may need to convene a research misconduct panel of independent people, which may involve additional interviews, assessment of evidence, multiple rounds of panel discussions and decision-making. The means of investigation can be very labour and resource intensive, for example, involving originality software analysis or image forensic analysis across multiple publications.

Institutions can be restricted in the steps they can take to manage and investigate a concern. This is particularly true when a researcher is no longer affiliated with an institution or where publications involve multiple authors affiliated with different institutions based in different countries. In these cases, institutions may not have jurisdiction to engage with all the authors involved to assess their respective contributions and responsibilities and/or they may not have access to the research data to independently evaluate the truthfulness or accuracy of allegations or statements presented. Where appropriate, institutions may need to notify other affiliated institutions to seek this information, or rely on authors liaising with multiple other authors. These factors can further compound the timeliness of managing and investigating concerns and can limit the extent of Institutional findings. This applies to publication concerns involving paper mills where the varied indicators and patterns of paper mill activity can be difficult to detect and further assistance may be required from publishers or other institutions<sup>25</sup>.

Institutions should follow guidelines on collaborating with publishers and other institutions as appropriate to resolve a publication integrity issue, see, for example, the work of CLUE<sup>16</sup>, these working group recommendations on enhancing partnerships<sup>17</sup>, and guidance from COPE on cooperation between research institutions and journals<sup>18</sup> and the US Office of research integrity<sup>26</sup>. In some cases, the institution's ability to conduct a full investigation can be substantially compromised if a journal/publisher contacts the authors before making the institution aware

of the concerns; the timing of the journal-level versus institutional investigation can be critical to the preservation of relevant laboratory records. A cross-industry project and upcoming COPE guidance will be addressing this issue.

Communicating investigation outcomes to publishers can also be challenging. It can be difficult for institutions to find contact information for the relevant contact person at a publisher or journal. When navigating these communications, institutional officials need to balance the privacy of the researchers involved, legal or policy-based constraints, and the need to report sufficient information to support a journal/publisher response. Some institutions can report summary findings or excerpts of redacted investigation reports, whereas others are more restricted in what they can divulge even to journals/publishers. Where findings are limited due to a lack of independent means to assess the veracity of the data, institutions can report outcomes relating to the publication's trustworthiness and can make recommendations for an immediate Expression of Concern or a retraction of the article, for consideration with the publisher's own investigations or consideration of the matter.

Institutions are best-placed to alert the research funder to any allegation of potential fraud or misconduct and this may be a requirement of the research funding agreement. Funders in turn, also have responsibility for maintaining and promoting a culture of research integrity and for acting on any allegations of fraud or misconduct, for example, see these guidelines from the European Research Council<sup>27</sup>. However, there may be cases where it is appropriate for a journal or publisher to reach out to a funder too. There may be challenges where there is overlap between funders and institutions, for example, if research is funded by internal institutional funding or if co-funding bodies have to be contacted.

## **Challenges faced by third parties**

The challenges faced by third parties when raising paper mill concerns are outlined in this infographic<sup>14</sup> and expanded on in this section. The main challenge for this group is regarding communication with the relevant journal and/or publisher, or institution. There is not a standard way to communicate concerns and it can be difficult to reach or identify the people responsible for investigating concerns. Per COPE Core practices and topics<sup>28</sup> all journals and publishers should be able to be contactable by third parties, and should respond to third party concerns. However, not all journals provide information on their websites on how to raise concerns. Some journals/publishers provide an email address for a publication ethics group, some for the editor-in-chief or other senior editors, whilst others direct the third party to a text-only web form with which it is difficult to effectively communicate concerns about figures or data. In worst case scenarios, some provide no method to contact the journal and the third party has to search the institutional webpage of the editor-in-chief or handling editor in the hope of finding an email address. In cases where the person raising concerns is unable to reach a journal or does not receive a response, there are limited avenues by which to raise awareness of the integrity issue(s). These communication issues are magnified in paper mill cases where concerns often involve numerous journals, publishers and institutions.

Another frustration for third parties raising concerns is that journal/publisher investigations can be prolonged<sup>29</sup>, and meanwhile readers may continue to rely on articles unaware that concerns have been raised. Once concerns are communicated to a journal/publisher, or institution, their responses

vary widely. There may be no response, or a templated response saying that the concerns raised will be investigated following COPE guidelines. In some cases, the response may be automated. There is almost never an indication of when, if ever, the third party should expect an update on or the result of the investigation and it is not standard practice for journals/publishers to provide status updates in the interim. Even after a journal concludes an investigation, the result of the investigation may not be communicated clearly to the third party who raised the concerns. Sometimes retraction notices appear cryptically worded about the concerns and/or the outcomes of the investigation and may provide only limited information<sup>30</sup>.

Some journals refuse to engage with the concerns raised unless the third party identifies themselves and/or their institution. This contravenes COPE guidance on responding to concerns raised on a published article, either anonymously or not, and whether indirectly via social media<sup>31</sup> or directly to the editor or publisher<sup>32</sup>. On some occasions, editors may also inappropriately copy third parties into the follow-up emails with authors of papers which are the subject of the concerns raised. These issues can introduce legal, personal, and/or professional risks to the person raising concerns and serve as strong deterrents to reporting integrity issues.

It has also been raised that those helping to surface concerns about submitted or published work provide their integrity services on a voluntary basis. These contributions - which can require substantial time investment - are not formally recognised by the academic or publishing communities or otherwise credited in a manner that would be visible to their employers or funders.

## Concluding remarks

The issues that surfaced in this working group's discussion from the perspective of each contributor group underscore the needs for:

- (i) decisive and timely action;
- (ii) improved communications across contributor groups;
- (iii) improved cross-industry knowledge of processes, challenges, and constraints that impact different contributor groups' work in addressing large-scale integrity issues;
- (iv) updates to industry-wide standards to improve how different contributor groups work with one another when raising or responding to paper mill concerns.

The above recommendations and discussion represent initial steps toward achieving these goals.

## Author contributions:

An initial version of this document was made available in June 2024 by members of United2Act Working Group 2 via the United2Act website. The document was further revised following feedback and this Version 2 was made available in May, 2025.

Author contributions are as follows:

**Anna Abalkina:** conceptualisation; writing - original draft; writing - review & editing.

**Rebecca Barber:** conceptualisation; writing - review & editing.

**Jana Christopher:** conceptualisation; writing - review & editing;

**Tilla Edmunds:** conceptualisation.

**Theresa Fucito:** conceptualisation.

**Renee Hoch:** conceptualisation; writing - original draft; writing - review & editing.

**Ruth King:** project administration; writing - review & editing.

**Maria Kowalczyk:** writing - review & editing.

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**Gráinne McNamara:** conceptualisation; writing - original draft; writing - review & editing.

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**Elizabeth Moylan:** conceptualisation; writing - original draft; writing - review & editing.

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**Nicholas Wise:** conceptualisation; writing - original draft; writing - review & editing.

## Competing interests:

**Anna Abalkina:** employed by Freie Universität Berlin; provides paid and *pro bono* consultations to publishers on research integrity issues.

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**Jana Christopher:** employed by FEBS.

**Tilla Edmunds:** employed by Clarivate.

**Theresa Fucito:** employed by AIP Publishing.

**Renee Hoch:** employed by PLOS, member of COPE Council.

**Ruth King:** employed by U2A.

**Maria Kowalczyk:** employed by Frontiers Media.

**Svetlana Kleiner:** employed by Springer Nature.

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**Daniel Stuckey:** employed by Elsevier.

**Anne Walsh:** employed by Queensland University of Technology.

**Nicholas Wise:** employed by Taylor & Francis.



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## **Appendix:**

This appendix has recommendations and sample policies pertaining to editorial notes, corrections, expressions of concern, retractions, and removals/withdrawals. All amendments should be clear, transparent, appropriate, free to access and neutral in tone in accordance with NISO CREC guidelines<sup>33</sup> and the relevant COPE guidance, for example, COPE Retraction guidelines<sup>34</sup>. However, we acknowledge that this is an area of active discussion and innovation<sup>35</sup> and appreciate that the need to notify readers of an ongoing investigation, without altering the permanent version of record, is resulting in new types of amendments.

Publishers/journals should have clear policies in place about their usage of different types of post-publication notice, which may include use cases to address editorial and policy issues in addition to ethics and integrity issues. Findings from institutional investigations should only be indicated in published notices with permission from the institution. For further resources see STM guidance<sup>36</sup>, ICMJE guidance<sup>37</sup>, National Library of Medicine guidance<sup>38</sup>, NISO journal articles versions<sup>39</sup> and CSE guidance<sup>40</sup>.

## Amendment matrix

Type of Amendment/Purpose	When to use?
<b>Retraction</b> There is a significant issue such that the journal no longer stands by the article; the article is thereafter not considered as part of the published record.	COPE guidelines explain various situations when retraction could be used: for example, <a href="https://doi.org/10.24318/cope.2019.1.4">COPE Retraction guidelines (https://doi.org/10.24318/cope.2019.1.4)</a>  <a href="https://doi.org/10.24318/cope.2019.2.21">Inappropriate image manipulation in a published article (https://doi.org/10.24318/cope.2019.2.21)</a> May also be used if content was published in error, or if it comes to light after publication that an article does not meet the journal's/publisher's core requirements.
Elements to include/Examples (descriptive)	
<ul style="list-style-type: none"> <li>• Who is retracting (authors, editor, publisher, on behalf of the authors, on behalf of an institution)</li> <li>• Reason for retraction</li> <li>• Published on date</li> </ul> (Optional) The authors' response to the concern (Optional) Who brought the issue to the Editor/journals attention (Optional) The specific parts of the article that are flawed/problematic/unreliable (Optional) Linked post-publication notices, for example a previous EoC (Optional) Did the authors agree or disagree with the retraction or not respond (Optional) Date of retraction  <a href="https://doi.org/10.1002/ijgo.14281">https://doi.org/10.1002/ijgo.14281</a> <a href="https://doi.org/10.1080/21655979.2024.2299586">https://doi.org/10.1080/21655979.2024.2299586</a> <a href="https://doi.org/10.1159/000537697">https://doi.org/10.1159/000537697</a> <a href="https://doi.org/10.1002/1873-3468.14743">https://doi.org/10.1002/1873-3468.14743</a>	

Type of Amendment/Purpose	When to use?
<b>Removal/Withdrawal</b> There is a significant issue with an article AND the article itself should no longer be available.	Removals/withdrawals are rare and used in exceptional circumstances; in most cases retracted work should remain available online. However, they can be used where there has been a breach of confidentiality, or publication of libellous content, or copyright/Intellectual Property has been infringed, or the authors did not have (and do not obtain) the requisite permissions to publish the content, or the work was not lawfully conducted, or a court or government has requested removal, or the editor concludes that the published content may present a substantial risk even if marked as retracted.
Elements to include/Examples (descriptive)	
<ul style="list-style-type: none"> <li>• Who is retracting (authors, editor, publisher, on behalf of the authors, on behalf of an institution)</li> <li>• Reason for retraction</li> <li>• Published on date</li> </ul> (Optional) The authors' response to the concern (Optional) Who brought the issue to the Editor/journals attention (Optional) Linked post-publication notices, for example a previous EoC (Optional) Did the authors agree or disagree with the retraction or not respond  <a href="https://doi.org/10.1002/ange.202006717">https://doi.org/10.1002/ange.202006717</a> <a href="https://doi.org/10.1371/journal.pone.0271107">https://doi.org/10.1371/journal.pone.0271107</a> <a href="https://doi.org/10.1371/journal.pone.0277977">https://doi.org/10.1371/journal.pone.0277977</a>	

\*Note that key article metadata should remain online and available after the removal: Author list, title, publication date, DOI

Continued →

## Amendment matrix

Type of Amendment/Purpose	When to use?
<b>Expression of concern</b> Expressions of concern are used where there are serious unresolved concerns about an article but the editor/publisher concludes that there is not sufficient grounds to retract.	Expressions of concern are typically authored by the Editor/Publisher. Where there is inconclusive evidence of a research/publication issue (for example, specify what the concern is); there are concerns about the content or underlying data but the level of evidence and/or concern do not meet the threshold/criteria for retraction; institutional input is needed on an issue but the authors' institution will not investigate or cannot be reached; there is a breach in the journal's/publisher's policy that cannot be resolved. Expressions of concern may also be used as interim notices to inform readers of serious concerns that have been raised but for which follow-up or investigation by the journal/publisher or institution is pending. An Expression of Concern can be followed by another Post-publication notice including a Correction, a Retraction or a Note. A resolution of an Expression of Concern can be indicated by the publication of a separate note on the article that refer to the EoC and describes the resolution. In all cases both the EoC and any following post-publication notices are retained for transparency.

### Elements to include/Examples (descriptive)

- Who is issuing the EoC
- The specific concerns (for example, parts of the article that are flawed/problematic/unreliable, any breach of policy issue(s))
- Whether the EoC is an interim notice for a pending case or reflects an editorial decision after case follow-up there is an ongoing investigation (meaning, as opposed to a perpetual EoC)
- Published on date

(Optional) Who brought the issue to the Editor/journals attention

<https://doi.org/10.1002/widm.1386>

<https://doi.org/10.1159/000536261> (perpetual)

<https://doi.org/10.1159/000535557> (active investigation)

<https://doi.org/10.1080/14767058.2022.2156860> (Active investigation)

<https://doi.org/10.1111/ajps.12455> (Resolution of an EoC)

<https://doi.org/10.33594/000000363> (Resolution of an EoC)

Type of Amendment/Purpose	When to use?
<b>Note</b> (also referred to as Notification, Publisher Note, Editor Note) A mechanism to quickly flag a potential issue with an article or provide an update to readers.	Where a concern has been raised about an article and verified by the editor, but the case outcome is not available yet because further investigation (either with from the publisher and/or the institution) is necessary. The publisher may use an EoC or a Note in such cases depending on case-specific details and potential impacts of the issue(s) and/or content. May also be used to flag issues that are relevant to readers' interpretation of the work, but that do not meet the criteria for Correction, EoC, or retraction.

### Elements to include/Examples (descriptive)

- The specific parts of the article that are in question
- Whether the note is an interim notice (there is an ongoing investigation) or reflects an editorial decision after case follow-up;
- Published on date

(Optional) Who brought the issue to the Editor/journals attention

<https://doi.org/10.1002/ijgo.14895>

<https://doi.org/10.1371/journal.pstr.0000149>

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## Amendment matrix

Type of Amendment/Purpose	When to use?
<b>Correction</b> (may also be referred to as erratum, corrigendum) To correct an error in an article	Where a portion of an otherwise reliable publication proves to be misleading; there are errors or issues that have been satisfactorily addressed in post-pub discussions; the author list is incorrect (that is, an author has been omitted or an author needs removing.
<b>Elements to include/Examples</b> (descriptive)	
<ul style="list-style-type: none"> <li>• The specific parts of the article that are incorrect</li> <li>• Published on date</li> </ul> (Optional) Was this a publisher error (Optional) Who brought the issue to the Editor/journals attention (Optional) State whether the original article has been republished	

Matrix end ■

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