The Plausible Hypothesis and Experimentation/Observations in Environmental Pollution Research

A hypothesis provides/states a question or working assumption by putting forth a plausible answer/explanation, maybe even an educated guess, that can be tested through repeated and independent observations and experimentation. The hypothesis can then be accepted or rejected and new hypotheses formulated and tested. The hypothesis does not necessarily need to be correct. In some research, the hypothesis may be incorrect. It should however be plausible and testable. It is also common that the hypothesis and its testing prove inconclusive. A better hypothesis may be required as well as better analytical devices to use in the research. Sometimes mistakes are made that affect the outcome of experiments, and errors in accepting and rejecting the hypothesis are made. Errors occur when the hypothesis is accepted and it should be rejected or when the hypothesis is rejected when it should have been accepted. Sometimes hypotheses are formulated that simply cannot be tested at this point in time. Sometimes experiments and observations cannot be made, an example being: the origin of life was on a distant planet. The experiments that need to be completed are not possible.

The key word that needs to be emphasized is **plausible** (e.g., valid, likely, acceptable, credible, reliable). Anything can be hypothesized. For example, the Earth is flat or the moon is composed of cheese. Knowing that the human imagination can design many hypotheses, it is useful to examine why a plausible hypothesis is often the better approach. In environmental science research, such as water, air and soil pollution, research is unfortunately sometimes conducted without proper hypothesis formation and testing. An immense amount of data can be collected but it does not lead to a more conclusive understanding of the subject.

Articles submitted to this journal should use the established scientific approach including hypothesis formation and testing to better focus the research and the novel scientific contribution. If an abundance of knowledge from correct experimentation is already available, no new knowledge is gained by simply repeating similar experiments and confirming for the nth time what is known to be correct. However, if the hypothesis and experimentation lead to new knowledge and/or an existing theory or body of knowledge is placed into question, then the scientific method has worked. Research that confirms existing knowledge and supports existing hypotheses does not add new knowledge to the discipline. The point is to formulate novel hypotheses, unless you suspect that previously tested hypotheses are not supported by the existing data sets and/or mistakes have been made. A plausible or credible new hypothesis is a valuable part of the scientific method. A poorly formulated hypothesis, followed by non-replicated, poorly designed experiments, generally leads to research of little significance that cannot be published as it is often judged as not acceptable during the peer review process.

Water, Air and Soil Pollution welcomes plausible hypothesis testing, new observations, correct experiments and controls, and novel knowledge that will help to better understand the complex planet Earth and the pollution to which it is subjected. Experiments that are of local interest, or that simply provide data sets or results from a new location, with no novel approach to dealing with the problem, are not suitable for submission. Authors are responsible to be aware of the literature in their chosen field and they will be asked to define the novelty of their paper at submission.

All authors should expand the complete list of author documents on the journal's homepage, under the heading *For Authors and Editors*, including the *Peer Review Guidelines*, *Publishing Ethics*, etc., and review these documents for advice before submitting to the journal. If your article does not have the necessary novel scientific weight or required form as per the *Peer Review Guidelines*, we request that you do not submit to the journal until such time as you have addressed the novelty of your research, can prove that it furthers the science (not just repeating known science with a new data set) and ensured the minimum requirements of form.

Note that *Water, Air, & Soil Pollution* will not tolerate unethical practices. This includes, but is not limited to: plagiarism; the deliberate non-citation of articles to mask plagiarism; the simultaneous submission of substantially the same article/material to different journals; fraudulently suggesting reviewers (including self-review) for articles; duplicate publication of substantially the same article/material; data fabrication or falsification; attributing authorship to anyone who has not actively participated in the research; not including authors who have actively participated in the research and undeclared conflict of interests. We have both plagiarism-detection software and other methods to detect such practices at our disposal to ensure the highest publication standards. Serious consequences, including rejection/retraction/publication bans/informing the author's institution may result from unethical behaviour. If you require more information about what constitutes unethical behaviour, including what constitutes plagiarism, please see the journal's author instructions on the journal's homepage before you submit to the journal.

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