ISSN: 2320-5407

International Journal of Advanced Research

Publisher's Name: Jana Publication and Research LLP

www.journalijar.com

ISSN NO. 2320-5407

REVIEWER'S REPORT

Manuscript No.: **IJAR-53820** Date: 14.09.2025

Title: ASSESSING POLLUTION FROM TRACE METALS ELEMENTS AND ANALYSING ECOLOGICAL RISKS IN THE TAILINGS FACILITY AND SURROUNDING SOILS AT THE SABODALA MINE

Recommendation:
Accept after major revision .....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality		✓		
Clarity			✓	
Significance			✓	

Reviewer Name: Dr.K.Arumuganainar **Date:** 14.09.2025

Reviewer's Comment for Publication.

5. Recommendation

Decision: Major Revision

The paper has significant potential but requires:

1. Improved clarity in objectives and novelty.
2. Justification for sampling strategy and analytical choices.
3. Stronger statistical treatment of data.
4. Better comparison with international environmental standards.
5. Careful English language editing.

Once these revisions are addressed, the manuscript could make a valuable contribution to the literature on environmental contamination from mining activities.

Detailed Reviewer's Report

Title of Paper: Assessing Pollution from Trace Metals Elements and Analysing Ecological Risks in the Tailings Facility and Surrounding Soils at the Sabodala Mine

1. General Assessment

The manuscript addresses an important environmental issue: contamination from trace metals in mining tailings and their ecological risks. The focus on the Sabodala mine, Senegal, provides both regional and global relevance, as heavy metal contamination from mining is a persistent challenge worldwide. The study employs multiple indices (Pollution Index, Geo-accumulation Index, Contamination Factor, and Ecological Risk Index) to quantify pollution, which strengthens the analytical framework.

The paper is well-structured with a clear **abstract, introduction, methodology, results, discussion, and conclusion**. However, there are areas that require improvement for better readability, methodological transparency, and scientific rigor.

2. Strengths

Relevance:** The paper addresses a pressing issue in mining environmental management.

Methodological breadth:** Multiple contamination indices (PI, Igeo, CF, ERI) provide comprehensive risk assessment.

Clear findings:** Arsenic identified as the major contaminant, with strong evidence from both concentrations and risk indices.

Practical implications:** The conclusion emphasizes the need for monitoring and possible rehabilitation strategies, such as phytoremediation.

3. Major Concerns

1. Clarity of Objectives:

The introduction could better emphasize the *specific research gap* this study fills compared to existing literature. Currently, it mostly reviews past studies without positioning the novelty of the work.

2. Methodology:

* While sample preparation and chemical analysis are explained, the **sample size (only 15 samples)** may be insufficient for strong statistical validity. A justification for why this sample number is representative of the site is needed.

* The choice of ICP-AES (instead of ICP-MS, for example) should be justified regarding detection limits, given the trace concentrations of Cd.

3. Data Presentation:

Tables are sometimes difficult to interpret (e.g., Table 3 combines both raw and average concentrations). More statistical analysis (standard deviation, confidence intervals) would increase reliability.

* Figures 4–8 show trends but lack proper scales, legends, and clarity. Improved visualization is necessary for international readers.

4. Discussion:

* The discussion section largely repeats results. More **comparative analysis with international standards** (WHO, EU, USEPA guidelines) would enhance impact.

* The ecological risk results should be connected to **possible human health risks** (through food chain, water contamination, etc.), which are only briefly mentioned.

5. Language and Style:

* Some grammatical errors and awkward phrasing reduce readability. For example:

* “Trace metals elements” should be “Trace metal elements.”

* “Acid-base status of these soils shows alkaline mining tailings and slightly alkaline soils” could be simplified for clarity.

* A professional proofreading is recommended.

4. Minor Concerns

* References are adequate but some are dated; more **recent studies (2022–2025)** on ecological risk of mine tailings should be cited.

* Units should be consistently formatted (e.g., "$\mu S.cm^{-1}$" sometimes written with missing spacing).

* Maps and spatial distribution figures (Figures 5, 6, 8, 10) should be enhanced with clearer legends and color coding.

5. Recommendation

Decision: Major Revision

The paper has significant potential but requires:

1. Improved clarity in objectives and novelty.

2. Justification for sampling strategy and analytical choices.

3. Stronger statistical treatment of data.

4. Better comparison with international environmental standards.

5. Careful English language editing.

Once these revisions are addressed, the manuscript could make a valuable contribution to the literature on environmental contamination from mining activities.