Review Form 3

Journal Name:	**Asian Journal of Chemical Sciences**
Manuscript Number:	**Ms_AJOCS_128749**
Title of the Manuscript:	**Study of chemical and microbiological pollutants in water from certain wells and boreholes in the town of Koudougou, Burkina Faso**
Type of the Article	**Original Research Article**

General guidelines for the Peer Review process:

This journal's peer review policy states that **NO** manuscript should be rejected only on the basis of '**lack of Novelty'**, provided the manuscript is scientifically robust and technically sound.
To know the complete guidelines for the Peer Review process, reviewers are requested to visit this link:

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Important Policies Regarding Peer Review

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PART 1: Comments

	Reviewer's comment	**Author's Feedback** *(Please correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Please write a few sentences regarding the importance of this manuscript for the scientific community. A minimum of 3-4 sentences may be required for this part.	• This manuscript is of significant importance to the scientific community as it highlights the critical issue of groundwater contamination in a market gardening context near water bodies. • The study identifies key pollutants such as pesticides, heavy metals, and fecal contaminants and provides insights into their potential sources, including anthropogenic activities and natural processes like rock weathering. • By employing advanced analytical techniques such as Principal Component Analysis and hadrochemical facies analysis, the research offers a robust methodological framework for assessing groundwater quality. • This research underscores the urgent need for effective water management strategies and pollution monitoring to ensure access to safe drinking water, making it a critical contribution to the scientific community, policymakers, and public health stakeholders.	
Is the title of the article suitable? (If not please suggest an alternative title)	The title accurately reflects the article's content, but it's a bit lengthy and descriptive. Here's a suggested alternative title that's concise and informative: **"Groundwater Pollution in Koudougou, Burkina Faso: Chemical and Microbiological Assessment"**	
Is the abstract of the article comprehensive? Do you suggest the addition (or deletion) of some points in this section? Please write your suggestions here.	The article provides a good overview of the study, but some points could be added or clarified to make it more comprehensive. Here are some suggestions: **Additions:** • **Specific research question**: Consider adding a specific research question or hypothesis to provide context for the study. • **Location significance**: Briefly explain why Koudougou, Burkina Faso, is an important location for this study (e.g., high market gardening activity, water scarcity, etc.). • **Methodology summary**: Provide a brief summary of the methodology used, including the number of water samples collected and the analytical techniques employed. • **Key findings summary**: In addition to the results mentioned, summarize the main findings in 1-2 sentences, highlighting the most significant pollution issues. **Deletions:** • **Study duration**: The study duration is not crucial information for the abstract and can be omitted. • **Software and laboratory details**: While the methodology section should include these details, they are not essential for the abstract.	

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Is the manuscript scientifically, correct? Please write here.	Based on the abstract provided, the manuscript appears scientifically structured, but its accuracy depends on the details of the experimental design, data, and interpretations. Here are some key scientific considerations and potential concerns:
	• **Clear Aims and Methodology**: The study is focused on assessing groundwater pollution near water bodies, a well-defined and important issue. The methodology is sufficiently detailed, mentioning specific analyses like Principal Component Analysis (PCA), QuEChERS for pesticides, and bacterial filtration.
	  ○ Ensure that the methods align with international or standard protocols for water quality testing.
	• **Chemical Correlations and Hydrochemical Facies**: The identification of correlations among ions (e.g., Ca^{2+}, Mg^{2+}) and the attribution of pollution to anthropogenic sources appear reasonable. However, robust statistical validation and explanation of these relationships are essential for reliability.
	  ○ Confirm the sample size is adequate to justify PCA conclusions.
	• **Pesticide Residues and Bacteriological Contamination**: Reporting pesticide levels exceeding standards and high coliform counts (800 CFU/100 mL) aligns with water quality concerns. These findings emphasize the study's relevance, but they must include detailed thresholds, e.g., World Health Organization (WHO) standards, for comparison.
	• **Temporal and Spatial Context**: The study spans a year and covers multiple locations. This timeframe is suitable for assessing variability, but ensures the seasonal contamination dynamics are discussed, as they often impact water quality.
	• **Inferences on Pollution Sources**: Linking high Al^{3+} levels to rock weathering and attributing broader contamination to anthropogenic activity is plausible but requires robust evidence.
	  ○ Suggest integrating isotopic or more advanced hydrochemical tracing techniques for source attribution.
	Potential Issues:
	• **Pesticide Quantification and Method Sensitivity**: Ensure the QuEChERS adaptation is validated for the specific pesticides and matrix analyzed. Method sensitivity (limits of detection/quantification) should match regulatory limits.
	• **Statistical Rigor**: PCA results should include metrics like eigenvalues, explained variance, and loading plots for clarity.
	• **Generalizability**: Findings from Koudougou might not generalize to all regions. Highlight the specific environmental, climatic, and anthropogenic conditions that affect the results.
	• **Faecal Contamination**: Total coliform levels indicate contamination, but discussing specific pathogenic bacteria (e.g., *E. coli*) would strengthen health risk assessments.
	• **Conclusion Strength**: Declaring 60% of borehole water unfit is significant. Ensure this conclusion is backed by comprehensive chemical and microbiological data that aligns with local and international water safety standards.	

Are the references sufficient and recent? If you have suggestions of additional references, please mention them in the review form.	The references provided are a mix of academic journals, reports, and online sources. While they appear to be relevant to the study, there are some concerns: • The majority of the references are from 2019 or earlier, with only a few from 2021, 2022, and 2024. This may indicate that the study could benefit from more recent research. • Some references are from gray literature sources (e.g., reports, online articles), which may not be peer-reviewed. • There is a lack of diversity in the sources, with many references from the same regions (West Africa, Morocco) or authors. To strengthen the study, additional references from more recent and diverse sources could be incorporated. This might include: • Peer-reviewed articles from top-tier journals in environmental science, hydrology, and public health. • Reports from reputable international organizations (e.g., WHO, UNICEF, FAO). • Studies from other regions or countries with similar environmental and hydrological characteristics.	
Is the language/English quality of the article suitable for scholarly communications?	The language and English quality of the article are generally suitable for scholarly communication. However, there are some areas that require improvement: 1. **Clarity and concision**: Some sentences are lengthy and convoluted, making them difficult to follow. Breaking them up into shorter, simpler sentences would improve clarity. 2. **Grammar and punctuation**: There are occasional errors in grammar, punctuation, and spelling. A thorough proofread would help eliminate these mistakes. 3. **Consistency in formatting**: The formatting of tables, figures, and headings is inconsistent. Adhering to a uniform style throughout the article would enhance its overall appearance. 4. **Technical terminology**: While the article assumes a certain level of technical expertise, some terms might be unfamiliar to non-specialists. Providing brief explanations or definitions for these terms would increase the article's accessibility. 5. **Citations and references**: The citation style is inconsistent, and some references lack essential information (e.g., DOI, publication date). Ensuring consistency in citation style and providing complete reference information would strengthen the article's scholarly integrity. 6. **Figures and tables**: Some figures and tables are not clearly labeled or referenced in the text. Improving the labeling and referencing of these visual aids would facilitate comprehension. 7. **Transitions and connections**: The article could benefit from smoother transitions between sections and clearer connections between ideas. Adding transitional phrases and sentences would enhance the article's coherence. By addressing these areas, the authors can improve the overall quality and clarity of the article, making it more suitable for scholarly communication.	
Optional/General comments	**Nil**	

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PART 2:

	Reviewer's comment	**Author's comment** *(if agreed with reviewer, correct the manuscript and highlight that part in the manuscript. It is mandatory that authors should write his/her feedback here)*
Are there ethical issues in this manuscript?	*(If yes, Kindly please write down the ethical issues here in details)*	

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