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Journal Name:	British Journal of Applied Science & Technology
Manuscript Number:	2014_BJAST_12452
Title of the Manuscript:	Assessment of Hydrological Properties and Proximate Impact of Soakaway Leachate on Well-Water Quality in Two Residential Areas of Ibadan, Southwestern Nigeria
Type of the Article	Original Research Article

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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.

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PART 1: Review Comments

	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)
<u>Compulsory</u> REVISION comments	The authors need to discuss the geology and hydrogeology of the study areas. What are the aquifers? A description of the chemical composition of the soakaway waste water end member would provide a basis for interpreting the monitoring well data. A background sample from a pristine or near-pristine area far from urbanization would provide the other end of the spectrum of contamination. The Methodology section is a bit weak. Were the samples filtered? There are no references for the source of the analytical methods used for chemical parameters. Were the wells purged prior to sampling, and if so, how many well volumes were purged? Figure 1. Need to show where the soakaways are	This study being a preliminary study, did not explore the hydrogeological characteristic of the study area, however the physicochemical and microbial variations that existed within study area is largely due to depth, and proximity to soakaway since they are expected to be served by the same aquifers. While samples from pristine area were not taken into consideration, some sample units could as well be considered near-pristine based on the depth and distance from the nearest soakaway. Comparative analysis of the chlorine Microbial, Nitrogen content support this. Wells were not purged. The table showing the distance from well



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	located relative to the monitoring wells. Table 1. Please fix this table. There are too many significant figures; there should be only three significant figures for the max and min. For example, 23.99 mg/L should be rounded to 24.0 mg/L, 11.56 mg/L to 11.6 mg/L, 88.14 to 88.1, etc. This will reduce the number of significant figures for the rest of your table. Ph should be pH and the maximum pH cannot be 145.79, and not 11.4833 for a mean. There are three figures showing changes with time (salinity, total dissolved solids, and electrical conductivity). These measurements are essentially the same; one figure would suffice. Why not show changes in other parameters with distance from the soakaways (e.g., total N, Cl, K, and/or coliform)? Cross sections would show the reader how the contaminants are distributed and moving. Contour maps of Cl and total N at both study areas would show the effects of the soakaway on adjacent groundwater and would probably yield information on groundwater flow directions. In addition, X-Y plots would show a more complete picture of the relationships between ion such as Na and Cl, Cl and total N, etc. For example, is there a single trend or multiple trends? If multiple trends	to the nearest soakaway is included in the attached appendix for the purpose of this reviewer. All necessary corrections were effected on Table 1. The significance of the changes in other parameters and distance from soakaways was analysed.
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	are present (we often see multiple trends between Cl and total N), then statistical relationships will not be so straight forward as a single correlation coefficient. What is land use in Akobo (the sparsely populated study area)? Is the soakaway the only possible source of Cl, N, bacteria, etc? Is there livestock in the area or are fields fertilized with manure?	Both Akobo and Agbowo are mainly residential area. There are no industrial or agricultural activities that could impact on Cl, N and bacteria component of the underground water around these study areas.
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<u>Minor</u> REVISION comments	Line 19. 200 cubic meters per day per person cannot be right. Actually, there are so many minor problems in this paper, I am going to focus on the major ones.	Line 19 has been corrected.
<u>Optional/General</u> comments	In general, I found this paper very difficult to review in a large part because there are no data presented other than a badly put together summary table. I realize that it would be difficult to include a table with 150 sample analyses (about 3 pages), but it would be extremely helpful. Alternatively, the authors might be able to make them available as an appendix, or through the journal. As it stands, without the actual data or data plots as suggested above, I cannot review this paper with any certainty. In addition, the readers will be unable to envision the results based solely on the discussion of the results of the statistical analyses. The discussion beginning on line 298 where the authors state that salinity, total dissolved solids, and electrical conductivity are strongly correlated, not to mention the rambling discussion of the various ions, suggests that the authors have little understanding of groundwater chemistry. One does not need to apply statistical analyses to these salinity, TDS and EC to come to the realization that they are essentially the same parameter under the conditions in their study areas. It is well known that sewage and septic effluent are high in Na, Cl,	The objective of this study was to determine if locating domestic soakaway in close proximity with water wells as practiced in many Nigerian homes have direct influence on the water quality used for domestic purposes in homes. Therefore, composition of the sewage in the soakaway and the chemical composition of pristine and down-gradient groundwater were not considered in this study. An Appendix included in this report to clarify some of the question raised.



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	NH₄, PO₄ and bacteria and that the ions are major contributors to its salinity, electrical conductance, and TDS. The fundamental problem with this work is that the authors appear to have only a rudimentary understanding of groundwater chemistry. From the outset, they did not characterize the chemical composition of the sewage in the soakaway, nor did they characterize the chemical composition of pristine or even down-gradient groundwater. If they had, they would have had an understanding of what was being dumped into what and could have developed a conceptual model of what the outcome would be. Then, they should have plotted their data as chemical cross sections and isocon maps to determine the extent of the migration of the contaminant plumes. Following this effort, then, and only then, should they have used their statistical analyses to model and compare their study areas. My opinion is that unless the authors can first understand the simple nature of their contaminant source(s), the nature of the uncontaminated groundwater, and the contaminant plumes they are trying to characterize, they have no chance of making sense of their data no matter how much statistical analyses they throw at it.	
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