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► **To cite this version:**

Oche Joseph Otokpa, Joseph Omeiza Alao, Stephen Emmanuel. Environmental and Health Impacts of Unregulated Lithium Mining Practices: Lessons from Nigeria's Oil Industry. African Journal of Environment and Natural Science Research, 2024, 7 (3), pp.1 - 4. 10.52589/ajensr-h1og8f5u . hal-04647226

HAL Id: hal-04647226

<https://hal.science/hal-04647226>

Submitted on 13 Jul 2024

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ENVIRONMENTAL AND HEALTH IMPACTS OF UNREGULATED LITHIUM MINING PRACTICES: LESSONS FROM NIGERIA'S OIL INDUSTRY

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Cite this article:

Oche J. O., Joseph O. O., Stephen E. (2024), Environmental and Health Impacts of Unregulated Lithium Mining Practices: Lessons from Nigeria's Oil Industry. African Journal of Environment and Natural Science Research 7(3), 1-4. DOI: 10.52589/AJENSR-H1OG8F5U

Manuscript History

Received: 14 Apr 2024

Accepted: 20 Jun 2024

Published: 12 Jul 2024

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ABSTRACT: *Unregulated lithium mining in Nigeria poses severe environmental and health risks akin to the historical devastation caused by oil extraction in the Niger Delta, where oil exploration activities led to oil spills and gas flaring, resulting in soil and water contamination, biodiversity loss, and public health crises. Similarly, lithium extraction depletes and contaminates water, exacerbating water scarcity and health issues. Hazardous by-products from lithium mining, such as heavy metals and toxic chemicals, often cause air pollution, environmental degradation, and severe respiratory and systemic health problems. To prevent a repeat of the catastrophic outcomes seen in the Niger Delta, stringent environmental regulations, comprehensive impact assessments, and community involvement are imperative. Establishing a specialized regulatory body and adopting best practices from established lithium mining countries can ensure the sustainable and safe exploitation of lithium resources.*

KEYWORDS: Environmental impacts, Health risks, Unregulated mining, Lithium extraction, Nigeria's oil industry.



INTRODUCTION

There is a growing concern regarding the environmental and health impacts of unregulated lithium mining practices in Nigeria, and to draw parallels with the historical consequences of Nigeria's oil industry. The lessons from the environmental degradation and public health crises faced by communities in the Niger Delta should inform our approach to lithium mining to prevent similar outcomes.

The oil industry in Nigeria has a well-documented history of environmental damage. Oil spills, gas flaring, and pipeline leaks have resulted in severe soil and water contamination (Iheriohanma, 2016). A study by Amnesty International revealed that over 11 million barrels of oil have been spilled into the Niger Delta since oil extraction began, devastating local ecosystems and livelihoods (Achunike, 2020). Environmental rights groups and several studies in Nigeria reported that oil spills have rendered vast tracts of land infertile and contaminated water sources, leading to loss of biodiversity and long-term ecological damage (Lindén & Pålsson, 2013).

ENVIRONMENTAL AND HEALTH RISKS OF UNREGULATED LITHIUM MINING

The escalating rate of unregulated lithium mining in Nigeria poses significant environmental and public health risks. Lithium extraction often involves the use of large quantities of water, leading to water depletion and contamination (Kaunda, 2020). According to the United Nations Environment Programme, the extraction of one tonne of lithium requires approximately 2 million liters of water and around 50% of global lithium production occurs in regions experiencing water scarcity like Nigeria (UNEP, 2023). As a result, local ecosystems and communities face severe disruptions and contamination of their water sources, leading to adverse health effects and ecological damage.

Furthermore, there is the present challenge of the chemicals and by-products associated with lithium extraction, such as sulfuric acid and heavy metals, leaching into nearby water bodies (Gao *et al.*, 2021), further exacerbating health and water pollution concerns in a country where 86% of the people lack access to a safely managed drinking water source (UNICEF, 2022).

The health impacts of oil pollution in the Niger Delta are profound. Studies on the area have shown that exposure to oil pollutants has contributed to increased rates of respiratory problems, cancers, and other chronic diseases among local populations (Ordinioha & Brisibe, 2013). Similarly, the direct lithium extraction process produces hazardous byproducts harmful to human health, such as arsenic, lead, and cadmium, which must be safely disposed of to mitigate their detrimental effects (Zang *et al.*, 2022). In addition, lithium-induced degradation of air quality can lead to the inhalation and accumulation of fine lithium particles that can significantly increase blood levels and result in severe respiratory and systemic health issues such as muscle weakness, seizures, thyroid problems, kidney dysfunction, cardiovascular issues, and even coma (Hadrup *et al.*, 2022).

The potential for the environmental and public health catastrophe in the oil-rich Niger Delta to repeat itself in Nigeria's lithium-rich regions is high, especially if the current wave of



lithium mining activities to meet the global surge in demand proceeds without stringent environmental safeguards.

RECOMMENDATIONS FOR SUSTAINABLE LITHIUM MINING

To mitigate the environmental and health impacts of the current level of indiscriminate mining of lithium in Nigeria, it is imperative to implement comprehensive environmental and health regulations. The Nigerian government needs to clamp down on the proliferation of illegal lithium mining camps and enforce strict environmental impact assessments (EIAs) for all mining projects, ensuring that potential risks are thoroughly evaluated and mitigated.

Furthermore, the creation of a specialized regulatory body for lithium mining that focuses on the unique challenges and needs of lithium extraction in line with best practices from countries with established lithium mining industries, such as Australia and Chile, can help in developing sustainable mining frameworks. This body would oversee compliance with environmental and health regulations, conduct regular inspections, and ensure that mining practices meet international standards.

Community involvement and benefit-sharing mechanisms are also crucial. The Niger Delta's experience has shown that marginalizing local communities can lead to social unrest and conflict. Therefore, it is essential to engage local populations in decision-making processes and ensure that they receive tangible benefits from mining activities.

CONCLUSION

In conclusion, the environmental and health impacts of unregulated lithium mining in Nigeria can be significant, drawing alarming parallels with the country's oil industry. By learning from past mistakes and implementing stringent regulations and sustainable practices, we can safeguard the environment and public health while harnessing the economic potential of lithium resources.

Credit Authorship Contribution Statement

Oche Otorkpa: Conceptualization, Writing – Original Draft, Formal Analysis, Writing – Review & Editing.

Joseph Alao: Conceptualization, Supervision, Validation, Writing – Review & Editing.

Stephen Emmanuel: Formal Analysis, Writing – Review & Editing.

Funding

This study received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

Not Applicable



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