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High Rates of Organ Failure and Cardiovascular Diseases Linked to Local Grinding Machines in Nigeria: Legislative Pathways for Health Protection and Food Safety

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Executive Summary

Recent findings from the Federal Institute of Industrial Research, Oshodi (FIIRO 2026) indicate that the rising prevalence of organ failure and cardiovascular diseases in Nigeria may be linked to heavy metal contamination in food processed with locally fabricated grinding machines. These machines widely used in markets and small-scale food processing businesses, have been found to leach dangerous levels of metals such as lead, chromium, nickel, cadmium, iron, and zinc into staple food products, potentially exceeding safe limits established by the World Health Organization (WHO) and Food and Agriculture Organization (FAO). Prolonged consumption of contaminated food is linked to chronic organ damage, heart disease, and increased disease burden among Nigerians, including young and old adults. This brief outlines the evidence, public health implications, socioeconomic impacts, and legislative pathways for the National Assembly of Nigeria to act decisively. Addressing this emerging public health challenge and ensuring healthy living among Nigerians, This brief hereby recommends the following:

- i. The National Assembly, through its relevant Committees, (e.g Senate and House Committees on Science, Technology & Innovation) may wish to advice the Federal Ministry of Health and Social Welfare, the Federal Ministry of Innovation, Science and Technology on the need to develop national standards specifying food-grade materials (e.g., stainless steel Grade 304/316 and also increase the normal electric blenders to extra-large sizes) and fabrication protocols for all grinding equipment.
- ii. NASS may also wish to urge the Federal Government to provide fiscal incentives (grants/tax breaks) to manufacturers and vendors to adopt safer, NAFDAC-approved grinding machines like FIIRO's stainless-steel model.
- iii. Encourage the relevant Federal Ministries to facilitate training for grinding machine operators on maintenance, hygiene, and contamination prevention.

1. Introduction

Food processing using metal grinding machines for staples such as pepper, tomatoes, onions, beans, melon seeds and among others is a ubiquitous aspect of Nigerian diets and livelihoods. These machines are common in markets, roadside stalls, and informal enterprises because

they offer affordable and efficient food preparation services. However, evidence increasingly suggests that¹ locally fabricated and poorly maintained grinding machines may introduce toxic metal contaminants into food, posing significant health risks to consumers over time. This risk is compounded by deficiencies in equipment quality standards, weak

¹ Ibrahim, A. (2025). How local grinding machines lace food with deadly metals.

PUNCH. <https://punchng.com/how-local-grinding-machines-lace-food-with-deadly-metals/>



regulation, low consumer awareness, and the informal nature of these food processing operations.

The FIIRO Director-General, Dr. Jummai Adamu Tutuwa², disclosed that research by the Institute found heavy metals in foods processed with such machines, including lead, copper, chromium, nickel, cadmium, manganese, iron, and zinc some at levels exceeding international safety benchmarks. Prolonged ingestion of these metals can bioaccumulate in the body, damaging vital organs and contributing to cardiovascular disease³, kidney failure, liver dysfunction, and other chronic health conditions.

Consequently, this brief addresses this emerging public health challenge, and proffering urgent legislative engagement, enhanced regulation, standardized equipment production, public education, and robust enforcement to ensure healthy living among Nigerians.

2. Heavy Metal Contamination Mechanisms

- i. **Machine Materials and Wear:** Locally fabricated grinders often use low-grade metals prone to rust, wear, and corrosion, leading to metal fragments entering ground food. Components such as bearings, discs, and housings shed particles through abrasion and friction during use.
- ii. **Poor Maintenance:** Lack of regular servicing means worn parts release

more contaminants. Vendors frequently operate machines long past safe operational life cycles.

- iii. **Informal Sector Exposure:** Most grinders operate outside formal regulation, making routine inspection and quality control difficult for agencies such as the National Agency for Food and Drug Administration Control (NAFDAC) and the Standards Organisation of Nigeria (SON)⁴.

3. Types of Harmful Metals as Identified by FIIRO

Recent findings from the Federal Institute of Industrial Research, Oshodi (FIIRO 2026) outlined some of the harmful metals associated with the local machine which according to the report are dangerous to health. They includes the following:

- i. **Lead & Cadmium:** Linked to kidney toxicity, neurological impairment, and carcinogenic effects.
- ii. **Iron & Zinc:** While essential in small amounts, excessive iron acts as a pro-oxidant causing tissue damage and organ dysfunction; high zinc disrupts immune responses and metabolic pathways.
- iii. **Chromium, Nickel, Manganese:** These metals are associated with cellular toxicity, oxidative stress, and increased risk of heart disease and organ damage with chronic exposure.

² Innocent, R. (2026). FIIRO warns local grinding machines causing organ, heart diseases in Nigeria. *Western Post*. <https://www.westernpost.ng/fiirro-warns-local-grinding-machines-causing-organ-heart-diseases-in-nigeria/>

³ Samuel, D. (2026). Scientists' latest discovery on what is causing organ failure and heart disease in Nigeria. *Within Nigeria*. <https://www.withinnigeria.com/2026/02/1>

[9/scientists-latest-discovery-on-what-is-causing-organ-failure-and-heart-disease-in-nigeria/](https://www.withinnigeria.com/2026/02/1)

⁴ Agbo, J. (2026). FIIRO unveils stainless steel grinding machine to tackle metal contamination in food. *The Nation*. <https://thenationonline.net/fiirro-unveils-stainless-steel-grinding-machine-to-tackle-metal-contamination-in-food/>



4. Health and Socioeconomic Impacts

Some of the health hazards of the heavy metal contamination in food processed with locally fabricated grinding machines as identified by FIIRO research includes⁵:

- i. Increased Chronic Diseases: Chronic ingestion of contaminated food may contribute to rising incidences of cardiovascular disease, kidney failure, liver dysfunction, and cancers, even in younger adults.
- ii. Organ Failure Risk: Continuous exposure to heavy metals like cadmium and lead accelerates organ degeneration by impairing cellular function and damaging tissues over time.
- iii. Vulnerable Populations: Children, pregnant women, and individuals with pre-existing conditions are at heightened risk due to increased absorption rates and cumulative effects.
- iv. Healthcare Burden: Treating chronic diseases linked to toxic exposure places additional strain on Nigeria's already under-resourced health system.
- v. Economic Productivity Loss: Chronic illness reduces workforce productivity and increases household and national healthcare expenditures.
- vi. Consumer Confidence: Awareness of contamination risks may undermine market confidence in local food processing industries unless swift action is taken.

5. Areas for Legislative Intervention

Addressing this emerging public health challenge and ensuring healthy living among Nigerians, This brief hereby recommends the following:

- i. The National Assembly, through its relevant Committees, (e.g Senate and House Committees on Science, Technology & Innovation) may wish to advice the Federal Ministry of Health and Social Welfare, the Federal Ministry of Innovation, Science and Technology on the need to develop national standards specifying food-grade materials (e.g., stainless steel Grade 304/316 and also increase the normal electric blenders to extra-large sizes) and fabrication protocols for all grinding equipment.
- ii. NASS may also wish to urge the Federal Government to provide fiscal incentives (grants/tax breaks) to manufacturers and vendors to adopt safer, NAFDAC-approved grinding machines like FIIRO's stainless-steel model.
- iii. Encourage the relevant Federal Ministries to facilitate training for grinding machine operators on maintenance, hygiene, and contamination prevention.

6. Conclusion

The evidence linking locally fabricated grinding machines to heavy metal contamination in food and the consequent risk of organ failure and cardiovascular diseases represents an urgent public health

⁵ Samuel, D. (2026). Scientists' latest discovery on what is causing organ failure and heart disease in Nigeria. *Within*

Nigeria. <https://www.withinnigeria.com/2026/02/19/scientists-latest-discovery-on-what-is-causing-organ-failure-and-heart-disease-in-nigeria/>



concern for Nigeria. Addressing this requires a coordinated, multi-sectoral legislative response that enhances food safety, regulates equipment standards, strengthens enforcement, and empowers both producers and consumers with safe alternatives.

The National Assembly must act to protect public health while enabling economic

activity and safeguarding livelihoods. By prioritising evidence-based standards, incentivising safer technology adoption, and bolstering regulatory capacity, lawmakers can significantly reduce environmental exposure to toxic metals and improve long-term health outcomes for millions of Nigerians.

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