

# JOURNAL OF OCCUPATIONAL HEALTH, RISK MANAGEMENT AND SAFETY

A Journal of Department of Environmental Management, Faculty of Environmental Sciences, University of Calabar, Nigeria  
<https://johrms-unical.com.ng/>



<https://doi.org/10.60787/johrms.vol1no2.57>

ISSN: 3121-8806

## Environmental Hazards and Occupational Health Risk Exposure among Urban Market Traders Operating around Waste Disposal Sites in Aba, Nigeria

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### Abstract

Traders operating in locational markets in Aba, Nigeria, are continuously exposed to multiple occupational, environmental, and public health hazards due to inadequate waste management and unsafe working conditions. This study examined the impact of waste dump sites on the health of market traders in Aba Metropolis, focusing on occupational injuries, food safety practices, environmental hygiene, and access to health and regulatory support. A mixed-methods approach was adopted, combining structured questionnaires administered to 400 traders, field observations, focus group discussions, and key informant interviews. Descriptive analysis was used to summarize patterns of exposure, risk, and health outcomes. Findings revealed high levels of occupational risk, with 73% of traders experiencing injuries such as burns, cuts, and musculoskeletal strain. Environmental exposure risks, including proximity to open drains, improper waste disposal, and dust from nearby dump sites, affected 67% of respondents, while 78% reported poor health surveillance and 76% experienced regulatory neglect. Food safety practices were inconsistent, with less than half of traders regularly washing hands or covering food from contaminants. Health symptoms commonly reported included respiratory irritation (45.5%), eye discomfort (51%), and minor burns and wounds (59.5%). The study highlights a clear link between poor waste management practices and adverse health outcomes among market traders, reinforcing the need for targeted interventions. The research concludes that improved waste management, occupational safety measures, and regulatory oversight are critical to protecting traders' health and enhancing the sustainability of locational markets. These findings suggested that policymakers and urban planners should develop integrated strategies that combine environmental sanitation, occupational safety, and public health initiatives in Nigerian urban markets.

**Keywords:** Waste management, Occupational hazards, Market traders, Environmental health, Aba.

How to cite: Oguibe, A.L, Oko, P. E, Adindu, N.D, Bisong, J.O, Agbor, B. O. Ekumankama, C. D (202) Environmental Hazards and Occupational Health Risk Exposure among Urban Market Traders Operating around Waste Disposal Sites in Aba, Nigeria, JOHRMS, Vol. 1, Issue 2, 1-11



## Introduction

Urban markets are critical engines of economic activities in many Nigerian cities, providing livelihoods for millions of informal traders, particularly women, youth, and low-income households (Anifowose et al., 2025). However, the expansion of urban settlements and inadequate municipal waste management systems has created a scenario where trading often occurs adjacent to open waste dumpsites, exposing market workers to multiple occupational health hazards (Ozobu et al., 2025). These hazards include direct exposure to decomposing organic matter, chemical pollutants, airborne dust, and vectors such as rodents and flies, all of which compromise workers' health and productivity. Understanding how proximity to waste affects occupational health is crucial for designing interventions that safeguard traders' well-being while maintaining the economic vibrancy of urban markets (Ibifunmilola et al., 2024).

Globally, studies have highlighted the occupational health risks associated with informal markets, particularly in contexts where environmental sanitation is poor. In Southeast Asia, for example, street vendors operating near unregulated waste disposal sites reported high incidences of respiratory illnesses, skin infections, and gastrointestinal disorders (Hutton et al., 2025). Similarly, in Latin America, informal market workers have been documented to experience chemical exposure from nearby industrial effluents and uncontrolled urban waste (Pincay-Pilay & Carrasco, 2025). These studies underscore the urgent need for integrated public health measures in market environments, highlighting parallels with Nigerian urban markets where sanitation systems lag behind rapid urbanization (Ezeaka & Bartholomew, 2025).

In Africa, the challenges of urban waste management are particularly pronounced due to rapid population growth, informal settlement expansion, and weak regulatory frameworks. Cities, such as Accra, Nairobi, and Lagos, face mounting challenges in regulating waste disposal, leading to market traders operating in hazardous environments (Emakpor et al., 2024). Empirical evidence from these contexts shows that exposure to waste dumpsites significantly correlates with respiratory problems, vector-borne infections, and musculoskeletal disorders among traders, emphasizing the vulnerability of this workforce. This continental context provides a comparative backdrop for understanding occupational risk exposure in Nigerian markets (Ahworegba et al., 2022).

In Nigeria, studies have shown that urban waste management is largely ineffective in many city markets, with heaps of refuse accumulating near trading clusters (Zino Izu et al., 2025). Markets in Lagos, Aba, and Port Harcourt illustrate how traders are forced to operate at the edge of hazard due to limited space, poor drainage, and municipal neglect. For example, in Aba's Ariaria International Market, traders often navigate through wet refuse and stagnant water while conducting business, increasing the likelihood of slips, infections, and exposure to noxious gases. Such situations highlight the intersection of occupational health and environmental hazards in urban commercial spaces (Olufemi, 2023).

In Calabar, the state capital of Cross River State, for instance, urban markets such as Marina Market, Big Qua, and Mbukpa Market exemplify the coexistence of high commercial activity with poor waste management practices (Imanyi et al. 2023). Traders operating in these spaces are frequently in close contact with open refuse, untreated effluents, and stagnant drainage water, placing them at constant risk of burns, cuts, respiratory infections, and other occupational health challenges. These conditions are exacerbated by the tropical climate, which accelerates waste decomposition and promotes the proliferation of disease vectors, making market-based occupations precarious (Olajide & Lawanson, 2022).

Despite the evident risks, the informal nature of market operations, combined with limited enforcement of occupational health standards, leaves traders largely unprotected (Chinweze et al., 2024). Many traders rely on personal coping strategies, such as improvised protective clothing or avoidance of certain waste-heavy areas, but these measures are often inadequate to prevent cumulative health impacts. This underscores the importance of research that not only documents exposure levels but also links them to specific waste management practices and environmental conditions in Aba markets. Finally, examining the occupational health risks of traders near waste dump sites is crucial for public health, urban planning, and sustainable market management. By documenting the types of hazards, frequency of exposure, and associated health outcomes, the study provides empirical evidence for targeted interventions, including improved waste disposal, health education, and regulatory oversight. Such research also contributes to the broader discourse on environmental justice and informal labor protection in urban Nigeria, highlighting the intersection of economic livelihoods and health vulnerability in densely populated markets (Morakinyo et al., 2025). Consequently, this article aims to identify the various environmental hazards, as well as

the occupational health risk exposure among urban market traders operating around waste disposal sites situated in Aba, Nigeria

## **Methodology**

### *Study Area and Population*

The study was conducted in Aba Metropolis, Abia State, a major urban center in southeastern Nigeria, encompassing Aba South, Aba North, and Osisioma Local Government Areas. The metropolis hosts several key markets that serve as hubs of commercial and social activity, including Salad Market, Good Morning Market, Ehere Market, and Ahia - Ohuru Market. Aba experiences a tropical climate characterized by high rainfall, high humidity, and mean temperatures ranging from 24°C to 32°C, with vegetation ranging from mangrove forests along the coast to urbanized green spaces. The topography is generally lowland with occasional hills and ridges, and drainage is facilitated by natural rivers and constructed canals.

The commercial vibrancy of these markets is juxtaposed with infrastructural challenges, particularly inadequate waste management systems, which contribute to the accumulation of solid, organic, and chemical wastes, exposing traders, municipal waste officers, and market association representatives to various occupational and environmental health hazards. The study population comprised individuals actively engaged in market trading, municipal waste management personnel, and officials from market associations within Aba Metropolis.

### *Research Design and Data Collection*

A cross-sectional descriptive design employing mixed methods was adopted to comprehensively assess occupational, environmental, and health exposures. Primary data were collected through structured questionnaires administered to 400 traders, capturing socio-demographics, occupational hazards, exposure to waste, and health challenges. Field observations were conducted across the markets to document environmental conditions, waste accumulation, and hygienic practices. Key Informant Interviews (KIIs) were conducted with market association leaders, health officials, and municipal waste management staff, while Focus Group Discussions (FGDs) were held with groups of traders to explore collective experiences, coping strategies, and perceptions of health risks. Secondary data, including health records and municipal waste management reports, were reviewed to contextualize findings. Data were analyzed descriptively, using frequencies, percentages, and cross-tabulations to link waste exposure with reported health outcomes, while qualitative data from KIIs and FGDs were thematically analyzed to capture nuanced insights into traders' experiences.

## **Results**

The findings in Table 1 reveal a high prevalence of occupational hazards among traders in Aba's locational markets, illustrating the physically demanding and risky nature of informal vending. A majority of vendors reported prolonged standing and musculoskeletal discomfort (73%), indicating chronic strain from extended work hours and poorly designed stalls. Exposure to smoke and heat was also prominent (69%), highlighting the dual risks of cooking with open fires or solid fuels while working in congested market spaces. Burns (62%) and cuts (53.5%) were frequent, reflecting unsafe handling of cooking equipment, knives, and other tools. Additionally, 65 per cent of traders faced roadside traffic hazards, as many operate near busy roads without protective barriers, while nearly half (46.5%) were exposed to

chemicals such as detergents and fuel, underscoring the intersection of occupational and environmental risks. These results corroborate earlier studies that show informal market workers in urban Nigeria routinely encounter multifaceted hazards, often without protective measures or regulatory oversight, exposing them to both immediate injuries and long-term health effects (Odujobi & Onyekwe, 2025; Taiwo et al., 2025). The data clearly highlight the urgent need for structured occupational safety interventions, awareness campaigns, and enforcement of basic protective standards to mitigate these pervasive risks.

**Table 1: Occupational Hazard Exposure Among Traders**

Hazard Type	Vendors Exposed	Percentage (%)
Burns from hot equipment	248	62
Cuts and knife injuries	214	53.5
Smoke and heat exposure	276	69
Prolonged standing/body pain	292	73
Roadside traffic exposure	260	65
Chemical exposure (detergents, fuel)	186	46.5

**Source:** Authors' fieldwork, 2025

Table 2 highlights a mixed and generally inadequate level of food safety knowledge and hygiene practices among traders in Aba's locational markets. While 42per cent of vendors reported always washing their hands before handling food, a combined 58per cent only sometimes or rarely observed this basic hygiene practice, indicating potential for microbial contamination. Use of protective clothing such as aprons and hair covers was also inconsistent, with only 31per cent using them regularly and 69per cent applying them occasionally or not at all. Furthermore, more than half of the vendors (55.5%) failed to cover food from flies and dust, leaving products vulnerable to contamination from environmental agents. These patterns suggest that food handling practices are not systematically observed, which increases the risk of food-borne illnesses among consumers. Comparable findings were reported by Grace & Mutua (2022), who observed that urban market vendors in Nigeria often operate under minimal hygiene awareness and limited resources, while Adeyemo et al. (2024) also noted that lack of protective clothing and inadequate food covering were significant contributors to food contamination in informal markets. Overall, these findings underscore the urgent need for targeted food safety education, provision of basic protective materials, and enforcement of hygiene standards to reduce health risks associated with street-level food vending, which was duly noted by Omidiran et al. (2024).

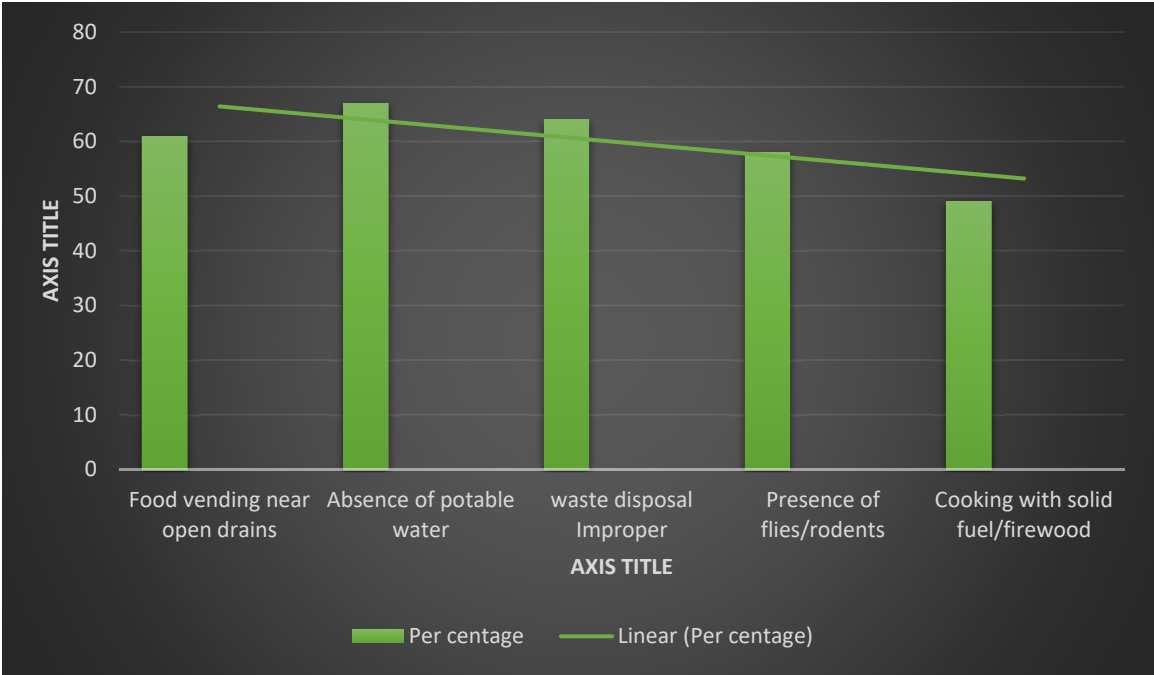
The observational data in Figure 1 highlight alarming environmental and workplace hygiene deficiencies in Aba's locational markets, which directly threaten the health of traders and consumers alike. A significant proportion of vendors (61%) operate near open drains, exposing themselves to pathogens and contaminating food, while 67per cent lack access to potable water, severely limiting safe food preparation and personal hygiene. Improper waste disposal affects 64per cent of sites, creating breeding grounds for flies, rodents, and other disease vectors, which were present in 58per cent of the observed

stalls. Nearly half of the vendors (49%) still rely on solid fuel or firewood for cooking, exacerbating the smoke.

**Table 2: Food Safety Knowledge and Practices**

Indicator	Category	Frequency	Percentage (%)
Handwashing before handling food	Always	168	42
	Sometimes	156	39
	Rarely/Never	76	19
Use of protective clothing (aprons, hair cover)	Regular	124	31
	Occasional	162	40.5
	Rare/Never	114	28.5
Covering food from flies/dust	Yes	178	44.5
	No	222	55.5

Source: Authors' fieldwork, 2025



**FIG 1: Environmental and Workplace Hygiene Conditions (Observation Checklist)**

Source: Authors' fieldwork, 2025

exposure and respiratory risks. These findings align with earlier studies that document the convergence of poor sanitation, inadequate infrastructure, and occupational hazards in informal food markets across Nigeria, reinforcing the urgent need for targeted interventions in hygiene, waste management, and infrastructure provision to safeguard both vendor and public health (Aliyu et al., 2024; Abimbola & Adamu, 2022).

Table 4 presents the prevalence of health symptoms experienced by traders over the past six months, revealing a concerning pattern of occupational and environmental health risks. Musculoskeletal pain emerged as the most common complaint, affecting 67per cent of vendors, likely linked to prolonged standing, repetitive movements, and handling of goods in crowded market spaces. Minor burns and wounds were reported by 59.5per cent of traders, reflecting frequent contact with hot cooking equipment, sharp tools, and other workplace hazards.

Respiratory irritation and frequent cough affected 45.5per cent of respondents, while eye irritation and smoke discomfort were slightly higher at 51per cent, indicating exposure to smoke, fumes, and dusty environments. Gastrointestinal illnesses were reported by 39per cent of traders, potentially associated with poor food hygiene and contaminated sources. These findings are consistent with prior studies in similar urban market contexts, where Oseni & Abudu (2023) documented high incidences of musculoskeletal strain and respiratory complaints among informal food vendors, and Emetumah et al. (2022) linked occupational burns and minor injuries to inadequate safety measures.

Collectively, this evidence highlights the compounded health burden faced by market traders, emphasizing the need for improved workplace safety, access to first-aid facilities, and interventions aimed at reducing exposure to physical, chemical, and environmental hazards noticed by Mohamed Sobhy Elsayed (2022).

**Table 4: Health Symptoms Reported by Traders (Last 6 Months)**

Health Challenge	Frequency	Percentage (%)
Frequent cough/respiratory irritation	182	45.5
Eye irritation/smoke discomfort	204	51
Musculoskeletal pain	268	67
Gastrointestinal illness	156	39
Minor burns and wounds	238	59.5

**Source:** Authors' fieldwork, 2025

Table 5 highlights a critical gap in health, training, and regulatory support available to traders, revealing a systemic vulnerability in urban market operations. Only 24per cent of respondents reported having received any form of food safety training, leaving the majority (76%) without formal knowledge of hygienic practices, proper food handling, or occupational safety protocols. Similarly, health inspection visits were rare, with just 22per cent of traders having experienced any form of regulatory oversight, while 78per cent had never been inspected. Access to first-aid materials was also limited, with only 29.5per cent of traders reporting availability, leaving most vendors unprepared to respond to burns, cuts, or other workplace injuries. These findings echo the concerns raised by Usman (2024), who observed that

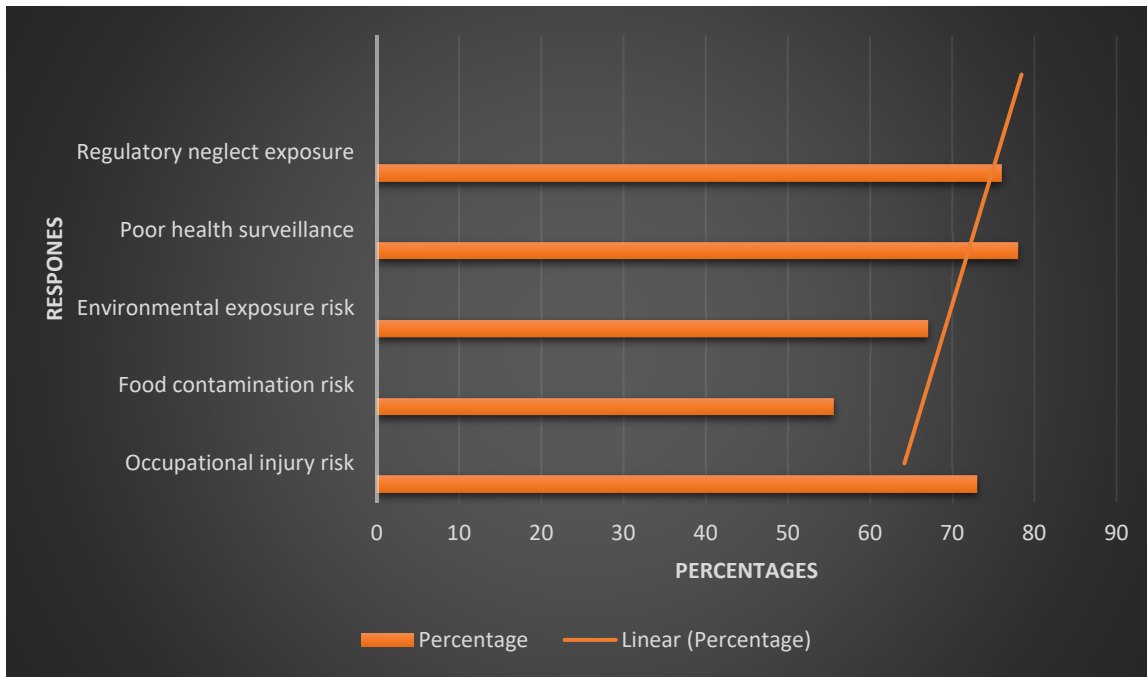
inadequate training and weak enforcement of food safety standards in Nigerian markets exacerbated both occupational hazards and public health risks, and by Umar (2026), who emphasized that lack of first-aid access significantly worsens the outcomes of common market-related injuries. It could be inferred that the data underscores a pressing need for structured training programs, proactive health inspections, and the provision of emergency response resources to safeguard traders' well-being and improve the overall safety and hygiene standards within locational markets.

**Table 5: Access to Health, Training, and Regulatory Support**

Indicator	Category	Frequency	Percentage (%)
Received food safety training	Yes	96	24
	No	304	76
Health inspection visits	Ever	88	22
	Never	312	78
Access to first-aid materials	Yes	118	29.5
	No	282	70.5

**Source:** Authors' fieldwork, 2025

The findings in Fig 2, reveal a highly vulnerable occupational landscape for traders in Aba’s locational markets, particularly those operating near waste dump sites. The majority of respondents face occupational injury risks (73%) from daily handling of hot equipment, knives, and prolonged standing, while over half (55.5%) are at risk of food contamination, reflecting gaps in food safety knowledge and practices. Environmental exposures such as dust, smoke, and poor sanitation affect 67 per cent of traders, compounding health risks. Notably, poor health surveillance (78%) and regulatory neglect (76%) indicate systemic weaknesses in monitoring, inspection, and protective interventions, leaving traders without institutional support or preventive guidance. These results are consistent with prior studies highlighting the intersection of informal trading, environmental hazards, and inadequate regulatory oversight in urban Nigerian markets (Alom, et al., 2025; Enemu & John-nsa, 2023), requiring the need for integrated health, hygiene, and regulatory interventions to mitigate cumulative occupational risks.



**FIG 2:** Composite Risk Profile of Traders

**Source:** Authors' fieldwork, 2025

## Discussion

The findings from this study reveal that traders operating in locational markets in Aba are exposed to multiple occupational, environmental, and health risks, highlighting the precarious nature of informal market work. A majority of traders reported experiencing hazards such as burns, cuts, smoke exposure, prolonged standing, and roadside traffic risks, with occupational injury risk reaching 73 per cent (Tables 1 & 6). Coupled with limited access to training, health inspection visits, and first-aid materials (Table 5), this creates an environment where both immediate and cumulative health risks are heightened. The presence of food safety gaps, such as inconsistent hand-washing, irregular use of protective clothing, and uncovered food items (Table 2), further compounds the vulnerability of both traders and consumers to contamination and disease transmission, echoing findings by Thomas (2022) in similar market settings.

Environmental and workplace hygiene challenges were also prominent, with over 60% of observed sites showing exposure to open drains, improper waste disposal, and proximity to rodents and flies (Figure 1). Health symptoms such as musculoskeletal pain, respiratory irritation, eye discomfort, gastrointestinal illness, and minor burns were widespread, affecting between 39 per cent and 67 per cent of respondents (Table 4). This demonstrates a clear link between poor environmental conditions, occupational exposure, and adverse health outcomes, supporting the assertions of Ogunro (2024) that improper waste management and environmental neglect in urban markets directly influence traders' health. The cumulative risk profile, combining occupational, environmental, and regulatory neglect, underscores the urgent need for integrated interventions, including structured safety training, regular health inspections, first-aid provision, and improved waste management, to reduce hazards and promote safer working conditions for urban market traders based on the meticulous research by Fajoye (2022).

## Conclusion

In conclusion, this study has demonstrated that traders in locational markets in Aba are operating under highly precarious conditions, where occupational hazards, environmental exposure, and poor regulatory oversight intersect to pose significant health risks. The findings reveal that a majority of traders experience injuries, musculoskeletal strain, respiratory and eye irritation, and gastrointestinal issues, largely exacerbated by proximity to waste dump sites, poor hygiene, and limited access to protective equipment or safety training. The study further highlights the systemic neglect in health surveillance and regulatory enforcement, which compounds the vulnerability of traders and underscores the critical gaps in the urban market safety and sanitation framework. These conditions not only threaten traders' well-being but also have implications for public health and market productivity, reinforcing the urgent need for structured interventions.

Moreover, the research underscores the interconnectedness of environmental management, occupational safety, and public health in informal market settings. The poor state of waste management and environmental hygiene around markets creates an environment where traders' daily activities become a source of exposure to multiple hazards. Addressing these challenges requires a comprehensive approach that combines policy enforcement, regular health and safety training, access to first-aid and protective equipment, and community-led environmental management initiatives. Strengthening these systems would not only safeguard the health of market traders but also enhance the sustainability and safety of urban markets, creating safer, healthier spaces for economic activity in Aba and similar urban centers across Nigeria.

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