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The Safety and Health of Sanitation Workers in Zambia: Risks, Challenges, and Pathways to Improvement

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Executive Summary

Sanitation workers in Zambia provide an indispensable public service, forming the backbone of public health and contributing directly to the nation's development and the achievement of Sustainable Development Goal 6. Despite their critical role in managing waste and preventing disease outbreaks, particularly in densely populated peri-urban areas, these workers face severe and multifaceted occupational health and safety risks. A significant portion of the workforce operates informally, exacerbating their vulnerability due to a lack of legal protection, inadequate access to personal protective equipment (PPE), and limited healthcare services. This report comprehensively details the biological, chemical, physical, and psychosocial hazards encountered by sanitation workers, ranging from exposure to deadly pathogens and toxic gases to chronic musculoskeletal injuries and profound social stigma. It highlights systemic gaps in infrastructure, training, and regulatory enforcement that perpetuate these hazardous conditions. While various governmental and non-governmental initiatives are underway to improve sanitation infrastructure and public health outcomes, a targeted and holistic approach is urgently needed to formalize the sanitation workforce, provide comprehensive safety provisions, ensure access to healthcare, and dismantle the pervasive social discrimination they endure. Addressing these challenges is not merely a matter of worker welfare but a fundamental prerequisite for achieving sustainable sanitation and public health for all Zambians.

1. Introduction

1.1. The Indispensable Role of Sanitation Workers in Zambia

Sanitation workers are an essential, yet often overlooked, component of Zambia's public health infrastructure. Their daily efforts are foundational to maintaining safe sanitation services in diverse settings, including private homes, educational institutions, and healthcare facilities. This critical work directly contributes to safeguarding public health and is indispensable for Zambia to achieve Sustainable Development Goal 6, specifically Target 6.2, which aims for universal access to safely managed sanitation. Their contributions are particularly vital in a country where poor water, sanitation, and hygiene (WASH) facilities are a direct cause of frequent diarrhoeal disease outbreaks, such as cholera and typhoid. These outbreaks commonly originate in Zambia's peri-urban settlements, which house a significant portion of the population, especially in the capital, Lusaka. Sanitation workers are therefore on the front lines, actively managing waste and maintaining infrastructure to mitigate these recurrent public health crises. Despite the crucial nature of their work, there is a profound contradiction in how sanitation workers are perceived and treated. The evidence consistently praises them as providing a "vital" and "essential public service," indispensable for national health and development. Yet, simultaneously, these same sources reveal that these workers are frequently "invisible, discriminated against, and subject to serious occupational and environmental health hazards". This stark contrast between their societal importance and their marginalized reality points to a systemic failure to adequately value and protect this essential labor force. Their lack of visibility directly contributes to precarious working conditions, limited legal and social protections, and the pervasive social stigma they endure. Addressing this fundamental lack of recognition is not merely a matter of social justice; it is a prerequisite for any meaningful and sustainable improvement in their safety, health, and overall well-being. Without acknowledging their

existence and contributions, comprehensive policies and investments aimed at their protection will remain largely ineffective.

1.2. Context: Zambia's Sanitation Landscape and Public Health Imperatives

Zambia, a low-middle-income country in Sub-Saharan Africa, faces significant challenges in ensuring safe water and sanitation for its population. As of 2016-2017, only 40% of the population had access to improved sanitation facilities, a figure that drops dramatically to as low as 10% in some peri-urban areas. By 2014, less than half of Zambia's population had adequate sanitation, underscoring a persistent national challenge.

In an effort to address these pressing issues, the Zambian government, with substantial financial and technical support from international partners including the World Bank, the European Investment Bank (EIB), and the German Development Bank (KfW), initiated the Lusaka Sanitation Program (LSP). This ambitious program aims to significantly enhance sanitation access for over half a million families, expand wastewater treatment capacity at key facilities such as those in Chunga and Ngwerere, and construct extensive new sewerage networks, with over 520 km of new sewer lines planned. The LSP has already demonstrated tangible success, improving sanitation for approximately 345,000 people and enhancing fecal sludge management for over 260,000, thereby exceeding initial targets.

The direct consequence of inadequate sanitation infrastructure is a severe impact on public health. This manifests in increased child malnutrition, widespread illness, and premature deaths, collectively contributing to an estimated 1.3% loss of Zambia's Gross Domestic Product (GDP) annually. Cholera outbreaks are a recurring and devastating public health emergency in Zambia. Recent severe resurgences, such as the 2023-2024 outbreak, have reported over 10,887 cases and 432 deaths, with Lusaka being the epicenter. These outbreaks are intrinsically linked to insufficient WASH access, contaminated water sources, and deficient infrastructure. The direct causal link between inadequate sanitation infrastructure and widespread public health crises, particularly cholera outbreaks, is well-established.

Concurrently, sanitation workers are explicitly identified as being on the front lines, directly exposed to the hazardous waste and unhygienic conditions that result from these infrastructural deficiencies. This establishes a clear and profound interconnectedness: any improvements in sanitation infrastructure, such as the construction of new sewer lines, enhanced treatment facilities, or formal emptying services , inherently serve a dual purpose. They not only improve public health outcomes by reducing disease transmission for the general population but also fundamentally improve the working environment and reduce direct exposure risks for sanitation workers. This means that investments in sanitation infrastructure should not be viewed solely through the lens of public health benefits to the general population. Instead, they must be recognized as critical occupational health and safety interventions for the sanitation workforce. A truly holistic and sustainable approach to sanitation development, as partially adopted by programs like the Lusaka Sanitation Project , is essential for ensuring both community well-being and the safety of those who maintain these vital services.

2. Defining the Sanitation Workforce and its Operations in Zambia

2.1. Diverse Types of Sanitation Work and Services

The term "sanitation worker" encompasses a broad spectrum of roles involved in the entire sanitation service chain, from the initial collection of waste to its final disposal or treatment. In Zambia, these diverse roles are critical for the effective management of both solid and liquid waste, playing a crucial part in the nation's public health efforts.

One significant category includes **toilet cleaners and caretakers**, who are responsible for maintaining hygiene in various settings, including domestic residences, public facilities, and institutional environments such as schools and clinics. Their work ensures the immediate cleanliness and usability of sanitation facilities for the general public.

Another major and often hazardous area of work is **pit and septic tank emptying**. In Lusaka, formal teams are available to provide these emptying services, often utilizing mechanical means such as vacuum trucks. However, in peri-urban areas, where narrow streets and informal settlements make access for large vehicles difficult, the emptying of pit latrines is frequently undertaken by informal "frogmen". This manual work often involves physically entering the pit or tank, using rudimentary tools, and coming into direct contact with human waste, highlighting a stark difference in operational safety between formal and informal practices.

Sewer and manhole cleaning and maintenance constitute another vital segment of sanitation work. This involves the maintenance and unblocking of sewer lines, drains, and manholes, particularly during periods of flooding or when blockages occur due to waste accumulation. Where advanced machinery is unavailable, this task can necessitate workers physically entering sewers and unblocking drains by hand, often without adequate protective equipment. **Operating pumping stations and treatment plants** is a more formalized aspect of the sanitation chain. These workers manage the processing of septage from septic tanks, sludge from pit latrines, and sewage from sewer networks at dedicated treatment facilities. Lusaka is actively engaged in building or upgrading several such facilities in areas like Chawama, Kanyama, and Ngwerere to increase treatment capacity.

While distinct from fecal sludge management, the broader definition of sanitation workers often includes those involved in **solid waste collection**. These individuals collect waste from homes, businesses, and public spaces. Companies such as the Lusaka Integrated Solid Waste Management Company (LISWMC) and Ebusaka provide these services, which include residential waste pickup and the management of landfill and disposal facilities.

Finally, workers involved in the **construction and rehabilitation of sanitation infrastructure** are also part of this workforce. This includes the planning and physical construction of new sewer lines, household on-site sanitation (OSS) systems, and public toilets in various locations.

The detailed descriptions of these various sanitation tasks reveal a clear hierarchy of inherent risk. While operating a wastewater treatment plant involves certain hazards, the evidence explicitly highlights that the "emptying and transport stages" are "the most common and riskier tasks". Furthermore, manual emptying, especially in inaccessible areas, is described as involving "physically entering the sewer and unblocking the drains by hand with no protective equipment and clothing" or "entering into the pit or tank" , with direct contact with human waste. This indicates that certain roles, particularly those involving direct manual handling of raw waste and entry into confined spaces, carry significantly higher and more immediate dangers than

others. This differential in risk profiles means that policy development and intervention strategies cannot adopt a uniform approach. Instead, they must be meticulously tailored to the specific hazards associated with each type of sanitation work. The most vulnerable workers, predominantly those engaged in informal, manual, and direct-contact roles, require the most urgent and targeted attention, including specialized equipment, training, and protective measures.

2.2. Formal vs. Informal Employment: Characteristics and Implications

A critical distinction within Zambia's sanitation workforce lies between formal and informal employment, a delineation with profound implications for worker safety and health. In many developing countries, including Zambia, a significant portion of sanitation workers operate informally, frequently without legal recognition or the labor rights typically afforded to formal employees. These informal workers are commonly engaged in "manual emptying services to households, particularly where inaccessible to trucks and to the most vulnerable households".
Formal Employment: A formal and permanent sanitation workforce exists, particularly for roles involving the operation of sewers, pits, septic tanks, and treatment facilities. The basic working conditions for these workers are generally protected by law. For instance, government-employed sanitation workers are noted to typically have better access to infrastructure, appropriate tools, and personal protective equipment (PPE), and consequently face comparatively moderate health and safety risks.
Characteristics of Informal Employment: The conditions faced by informal sanitation workers present a stark contrast:

- **Lack of Protection:** Informal workers frequently operate without adequate protection, leading to direct and unprotected contact with human waste. They often lack even basic tools or protective equipment, resorting to rudimentary methods for dangerous tasks.
- **Financial Precarity:** Their work is characterized by significant financial instability. This includes low and unstable incomes, frequent payment delays, and considerable difficulties in accessing formal financial services such as loans or bank accounts. Some reports even indicate instances where workers are paid in food rather than monetary compensation.
- **Social Stigma and Discrimination:** Informal sanitation workers are highly susceptible to profound social stigma and discrimination, often being ostracized and subjected to ridicule by their communities. To avoid detection and the associated embarrassment, they may resort to performing their duties at night.
- **Weak Legal Protection:** They typically suffer from weak legal protection, the absence or inadequacy of standard operating procedures (SOPs), and limited enforcement or oversight of existing labor laws and policies designed to protect workers. This fundamental lack of legal recognition is a significant barrier, preventing them from accessing essential financial and social services.

The evidence consistently and explicitly states that the challenges related to health, safety, financial security, and legal protection are "more acute for manual emptiers and those working informally". This heightened vulnerability is directly attributed to their lack of legal recognition, which then creates a cascading effect: without formal status, they are denied access to crucial benefits such as health insurance, stable wages, and the consistent provision of proper PPE. Furthermore, their informal status means they are often "unquantified" and "unseen" , exacerbating their marginalization and making their plight easier to overlook by policymakers

and society. This analysis strongly indicates that the formalization of the sanitation workforce, particularly for manual emptiers and other informal actors, is not merely an administrative or economic objective. It is, fundamentally, a critical public health and human rights imperative. Without comprehensive formalization, any interventions aimed at improving safety, health, and dignity will inevitably have limited reach and impact, failing to adequately protect the most vulnerable segment of this essential workforce.

3. Occupational Health Hazards and Risks Faced by Sanitation Workers

3.1. Biological Hazards: Exposure to Pathogens and Infectious Diseases

Sanitation workers are in constant, direct contact with faecal microorganisms, hazardous waste, and bodily fluids. This pervasive exposure, often occurring without adequate protective equipment, renders them highly susceptible to a wide array of biological agents and waterborne diseases.

The documented health risks include a long list of infectious diseases. These encompass common diarrhoeal diseases, cholera, typhoid, hepatitis (both A and B), polio, cryptosporidiosis, and schistosomiasis. For those working in sewers, Leptospirosis, a bacterial disease spread through contact with rat urine, poses a specific and serious risk. Beyond systemic infections, workers frequently suffer from localized conditions such as skin infections, eye irritations, and various types of cuts and wounds resulting from direct contact with waste and sharp objects embedded within it. Respiratory symptoms, including wheezing, coughing, and asphyxiation, are also prevalent due to the inhalation of bioaerosols from decaying waste and general dust particles.

The prevalence of waterborne diseases like cholera and typhoid in Zambia is explicitly attributed to poor WASH conditions and faecal-oral contamination. Sanitation workers, particularly those involved in manual emptying, are described as having "direct contact with human waste" and using "rudimentary tools". This establishes a clear and direct pathway for the transmission of pathogens from the hazardous waste to the worker. Furthermore, the widespread practice of unsafe waste disposal, such as dumping faecal sludge in fields or open drains , creates a mechanism for these pathogens to re-enter and contaminate the wider community. This causal chain highlights that improving worker safety through the provision of proper PPE, the adoption of mechanized emptying methods , and ensuring safe disposal practices is not merely an occupational health concern. It is a critical public health intervention that directly contributes to breaking cycles of disease transmission within communities. Protecting sanitation workers thus becomes an integral component of broader public health strategies aimed at preventing and controlling waterborne diseases, demonstrating that investment in their safety yields significant community-wide health dividends.

3.2. Chemical Hazards: Toxic Gases and Hazardous Substances

Sanitation workers are exposed to a range of harsh chemicals and toxic gases, particularly when working in confined spaces such as septic tanks and sewers. Specific gases mentioned as present in these environments include ammonia, carbon monoxide, and sulfur dioxide.

Exposure to these gases can have severe and immediate consequences, including loss of consciousness, acute respiratory distress, and even death.

Beyond these specific gases, the inhalation of smoke, fumes, powder, or dust is a frequently reported occupational hazard among Zambian workers generally, affecting 13% of respondents in one study. This risk is highly relevant for sanitation workers, especially those dealing with dried sludge, waste, or operating in dusty environments without proper ventilation. Contact with other chemicals, solvents, and thinners is also identified as a reported hazard for workers in Zambia, further broadening the spectrum of chemical risks.

While biological hazards from human waste are often visibly apparent, the danger posed by toxic gases in confined spaces like septic tanks and sewers is far less obvious but equally, if not more, lethal. The explicit mention of workers dying from inhaling toxic fumes underscores the immediate and severe nature of this risk. The anecdotal evidence of a worker using "sunlight and a matchstick to identify the presence of poisonous gases" starkly illustrates the extreme lack of proper safety equipment and training for detecting these invisible, yet deadly, threats. This reliance on rudimentary and life-threatening improvisation highlights a systemic failure in providing basic safety tools and protocols. Interventions aimed at improving sanitation worker safety must therefore prioritize specialized training for confined space entry, the mandatory provision of gas detection equipment, and the implementation of mechanical ventilation systems, particularly for manual emptiers and sewer workers. The current reliance on dangerous, improvised methods for hazard identification indicates a severe and unacceptable gap in safety protocols, investment, and regulatory enforcement that must be urgently addressed.

3.3. Physical Hazards: Ergonomic Strains, Injuries, and Environmental Dangers

The nature of sanitation work in Zambia frequently involves strenuous physical activities, including repeated heavy lifting, carrying, pulling, and pushing of waste materials and equipment. These physically demanding tasks commonly lead to musculoskeletal disorders, manifesting as chronic pain in areas such as the back, neck, shoulders, and legs. This type of ergonomic hazard is notably prevalent across the general Zambian workforce, with 30% of respondents in one study reporting body pain due to heavy object lifting, frequent bending, or rapid limb movement.

In addition to chronic strain, workers are at high risk of acute injuries. These often result from contact with sharp objects commonly found mixed with waste, such as razors, syringes, broken glass, metals, and iron sheets. Such contact can cause cuts, puncture wounds, abrasions, lacerations, and blunt force trauma. Slips, trips, and falls are also identified as common physical hazards within the workplace, contributing to a high prevalence of occupational injuries among waste collectors.

The working environment itself poses significant physical dangers. These include the risk of drowning in sewers, particularly when unblocking drains by hand without protective equipment. There is also a considerable danger of injury or death from the collapse of pit walls, especially during manual emptying operations. Furthermore, working outdoors exposes sanitation workers to various environmental elements and unpredictable conditions, including extreme temperatures, both hot and cold.

The available data highlights a dual physical burden on sanitation workers. On one hand, there is a high prevalence of musculoskeletal disorders, with 30% of Zambian workers generally

reporting such issues. This indicates a chronic, long-term toll from repetitive and strenuous labor, leading to conditions like lower back, hand, shoulder, and leg pain. On the other hand, the information explicitly details acute, immediate, and potentially life-threatening injuries such as cuts, punctures, abrasions, and fatalities from drowning or pit collapses. This demonstrates that workers face both debilitating chronic conditions that erode their long-term health and severe, sudden traumatic events that can lead to immediate injury or death. Effective safety interventions must therefore adopt a comprehensive approach, addressing both chronic ergonomic risks and acute safety hazards. This necessitates a strategic shift towards mechanization where feasible to reduce manual labor, coupled with the implementation of proper lifting techniques, mandatory rest periods, and ergonomic assessments. For acute hazards, measures such as fall protection, regular structural integrity assessments of pits, and stringent confined space safety protocols are critical. The inherent physical demands of manual sanitation work underscore the urgent need for a transition towards safer, less labor-intensive, and technologically supported methods to protect this essential workforce.

3.4. Psychosocial Hazards: Stigma, Discrimination, and Mental Well-being

Beyond the tangible physical and biological dangers, sanitation workers in Zambia endure significant psychosocial hazards that profoundly impact their dignity and mental well-being. Their profession is often deeply stigmatized, leading to ridicule and pervasive discrimination from society. They are frequently among the most marginalized, impoverished, and discriminated segments of society. This profound social ostracization can be so severe that some workers choose to perform their duties at night to avoid detection and the associated embarrassment and stigma within their communities.

To cope with the harsh realities, the unpleasantness, and the physical pain inherent in their work, some sanitation workers resort to detrimental coping mechanisms, including working under the influence of alcohol or drugs. While these substances may offer temporary relief from physical discomfort or the psychological burden, this practice further exacerbates their vulnerability to accidents and contributes to long-term health issues.

A broader study on occupational health in Zambia indicated that work-related stress was reported by a significant 77% of workers, and some form of psychosocial or physical abuse by 68.5%. Given the unique and highly stigmatized nature of sanitation work, it is highly probable that these figures are amplified for sanitation workers, who face additional layers of social contempt and lack of recognition.

The available information consistently reveals that beyond the obvious physical and biological dangers, sanitation workers face a profound psychosocial impact. This includes pervasive stigma, discrimination, and the adoption of harmful coping mechanisms like alcohol consumption. This suggests that the "dirty work" extends far beyond physical contact with waste; it inflicts a deeply damaging social and psychological burden that erodes workers' dignity and mental well-being. The high rates of reported work-related stress among general Zambian workers are likely compounded for sanitation workers, given their unique and often reviled societal role. Improving the safety and health of sanitation workers therefore requires a multi-faceted approach that extends beyond mere physical protections. It necessitates a fundamental societal shift towards recognizing their essential contribution, actively combating stigma through public awareness campaigns, and providing psychosocial support services. Addressing these invisible tolls is as critical as providing PPE or improving infrastructure, as it directly impacts

their overall quality of life, mental health, and willingness to continue performing a service vital to public health.

4. Systemic Challenges and Gaps in Safety and Health Provisions

Despite the critical role of sanitation workers, Zambia faces significant systemic challenges and gaps in ensuring adequate safety and health provisions for this essential workforce. These issues span infrastructure, training, legal frameworks, and access to healthcare.

4.1. Inadequate Infrastructure and Equipment

A primary challenge stems from inadequate infrastructure and equipment. The lack of proper Faecal Sludge Treatment Plants (FSTPs) and sufficient office or parking spaces for sanitation operations often leaves workers with no choice but to unsafely dispose of faecal sludge directly into the environment. This practice not only poses severe environmental and public health risks but also increases the stigma associated with their profession. For instance, in Mongu Town, land designated for wastewater treatment ponds has been encroached upon by housing, further limiting proper disposal options. In Lusaka, while the Lusaka Water and Sanitation Company (LWSC) manages seven wastewater treatment plants, these facilities cover only an estimated 14% of the population, indicating a significant infrastructural deficit. The absence of proper office and parking spaces also affects the credibility of sanitation service providers and increases the risk of discrimination against workers.

Furthermore, there is limited access to and poor quality of Personal Protective Equipment (PPE). While government-employed sanitation workers generally have better access to PPE , informal workers frequently operate without any protection, or with rudimentary and inadequate gear. Reasons cited for non-usage of PPE include its cost and impracticality, with workers reporting heavy boots, low-quality gloves, difficulty breathing with face masks, and increased body temperature when wearing work suits. Some formal workers also report their PPE is worn out and needs replacement. This lack of appropriate PPE directly exposes workers to biological, chemical, and physical hazards.

The absence of advanced machinery for sewer and pit emptying further exacerbates risks, forcing workers to rely on manual, high-risk practices. This includes physically entering sewers and unblocking drains by hand, or manually emptying septic tanks and pit latrines, often without any protective equipment.

4.2. Gaps in Training and Awareness

Insufficient occupational safety and health training is a pervasive issue. While some workers may receive basic instructions or training, consistent and comprehensive education on safe practices, hazard identification, and emergency response remains inadequate. This is compounded by generally low education levels among some workers, which can influence their understanding of occupational hazards and safety measures. For example, studies suggest that higher educational attainment correlates with a greater likelihood of understanding and avoiding harmful exposures.

There is also weak awareness and enforcement of existing safety policies. Even when policies or guidelines exist, their implementation and consistent adherence are often lacking. This gap means that workers may not be fully informed of the risks they face or the correct procedures to mitigate them. The absence of standardized training programs across the sector, particularly for informal workers, contributes to inconsistent safety practices and heightened vulnerability.

4.3. Weak Legal and Regulatory Frameworks and Enforcement

Zambia possesses a legal framework intended to protect workers, including the Factories Act, Chapter 441, and the Occupational Health and Safety Act of 2010. These acts aim to promote and enforce occupational health and safety standards, establish health and safety committees, and outline duties for employers and employees. The Ministry of Labour and Social Security is mandated to administer and enforce these laws.

However, the effectiveness of these legal instruments is hampered by weak awareness and enforcement. The Factories Act, enacted in 1967, is considered inadequate for modern workplaces, as it does not cover many important sectors, such as hospitals, or account for new technological changes and emerging occupational hazards. There is an urgent need to revise this Act to align with international best practices and cover a broader range of workplaces and hazards.

A significant systemic gap is the lack of legal recognition for informal sanitation workers. This informal status is a fundamental barrier, preventing them from accessing crucial financial and social services, stable employment, and the legal recourse necessary to advocate for their rights. Furthermore, there are challenges in coordination and data collection for On-Site Sanitation (OSS) and Faecal Sludge Management (FSM) regulation, leading to a lack of consensus on the status of services and indiscriminate handling and disposal of waste. Gaps and overlaps in legislation and roles among various players also hinder effective and inclusive sanitation service delivery.

4.4. Limited Access to Healthcare and Social Protection

Sanitation workers, especially those in informal employment, face significant barriers to accessing healthcare services, including essential vaccinations and emergency care. While formal workers, particularly those employed by government institutions, may have access to healthcare insurance (e.g., under NHIMA) and higher vaccination coverage, informal manual emptiers often report having no such insurance. Vaccination coverage for diseases like Tetanus, Hepatitis A, Hepatitis B, Cholera, and Typhoid is inconsistent, with lower rates observed in areas outside Lusaka.

Financial insecurity, characterized by low and unstable incomes and payment delays, further prevents informal workers from affording and accessing formal health services or purchasing necessary PPE. This economic vulnerability forces them to prioritize basic needs over health and safety provisions, perpetuating a cycle of exposure and illness. The lack of a robust social protection system for informal workers means they often bear the full burden of work-related illnesses and injuries without adequate support or compensation.

5. Current Initiatives and Pathways to Improvement

Recognizing the critical importance of sanitation and the challenges faced by its workforce, various governmental, international, and non-governmental organizations are implementing initiatives aimed at improving sanitation infrastructure, public health, and, to some extent, worker safety in Zambia.

5.1. Government and International Partner Initiatives

The **Lusaka Sanitation Program (LSP)** stands as a flagship initiative, involving a consortium of international partners including the World Bank, the European Investment Bank (EIB), the German Development Bank (KfW), the African Development Bank (AfDB), the European Union, the Bill & Melinda Gates Foundation, and the Government of Zambia. This program focuses on expanding sewerage networks (over 520 km planned), enhancing wastewater treatment capacity at facilities like Chunga and Ngwerere, and improving fecal sludge management (FSM) services. The LSP has already improved sanitation access for approximately 345,000 people and enhanced FSM for over 260,000, exceeding initial targets. The project also includes performance-based contracts with private operators for pit-latrine emptying and safe transportation of fecal sludge, aiming to stimulate the local FSM market.

The **Ministry of Labour and Social Security (MLSS)** holds the statutory mandate for formulating and administering policies related to national employment, labor, and social security, including occupational safety and health. The MLSS's Occupational Safety and Health Services Department is specifically tasked with promoting and enforcing occupational health and safety standards to prevent occupational diseases and accidents. This department administers and enforces the Factories Act, Chapter 441, which aims to protect workers from occupational hazards.

The **National Water Supply and Sanitation Policy**, developed by the Zambian Government in consultation with stakeholders, serves as a blueprint for coordinated development in the sector. It aims to accelerate universal access to clean and safe water and adequate sanitation, promoting integrated practices and rational utilization of natural resources to protect human health. This policy aligns with international commitments such as the Sustainable Development Goals (SDGs).

The **Zambia Environmental Management Agency (ZEMA)** plays a role in environmental governance, collaborating with entities like the Lusaka Integrated Solid Waste Management Company (LISWMC) to plan and implement landfill and disposal facility management procedures. ZEMA's involvement is guided by the National Policy on Environment, which coordinates environmental management in Zambia.

Furthermore, international bodies like the **World Health Organization (WHO)** and **UNICEF**, in partnership with organizations like WaterAid, are actively working to increase Water, Sanitation, and Hygiene (WASH) services in healthcare facilities in Zambia. These efforts include installing water stations for safe drinking and handwashing, strengthening hygiene measures, and promoting hand hygiene behavior through campaigns.

5.2. Non-Governmental Organizations (NGOs) and Local Efforts

WaterAid is a prominent NGO working in Zambia, focusing on citizen action and improving connections between communities and their local governments to respond to sanitation needs

with low-cost, sustainable solutions. WaterAid Zambia has actively called on Zambians to adopt a culture of hand hygiene, emphasizing sustained investment and system strengthening. They are also part of the global Initiative for Sanitation Workers (ISW), a partnership with SNV, ILO, World Bank, and WHO, which advocates for the health, safety, and dignity of sanitation workers.
The **SNV Netherlands Development Organisation** implements the WASH SDG Programme in Zambia, adopting a four-pillared integrated approach: demand creation for sanitation, sanitation supply chain development, hygiene behavioral change promotion, and WASH governance strengthening. SNV supports the capacity building of sanitation workers through various workshops and trainings on topics such as workplace health and safety.
World Vision Zambia implements the Zambia Water Sanitation and Hygiene Programme (ZWASH), aiming to improve access to clean and safe drinking water, sanitation, and hygiene for over half a million people, including children. Their work includes providing and rehabilitating boreholes, constructing sanitation and handwashing facilities, and conducting hygiene behavior change training at the community level.
Access to Health Zambia (A2HealthZ), a local NGO, focuses on improving the lives of women, mothers, adolescents, and children, with its strategic plan addressing various factors impacting health, including water, sanitation, shelter, and food safety/security. While not exclusively focused on sanitation workers, their broad WASH interventions contribute to a healthier environment for all.
The **International Labour Organization (ILO)** actively promotes decent work, the formalization of informal workers, and the building of strong unions and associations to protect worker rights. This includes advocating for fair wages, medical and maternity benefits, safety equipment, and security of employment for sanitation workers. The ILO works to integrate SDG 8 (decent work and economic growth) with SDG 6 (water and sanitation). Efforts are being made to encourage informal sector organizations to associate with the Zambia Congress of Trade Unions (ZCTU) to strengthen their socio-political representation and negotiate for improved working conditions.

5.3. Strategies for Formalization and Empowerment

A key pathway to improving the safety and health of sanitation workers is the **formalization of the informal workforce**. This involves providing legal recognition, stable contracts, and access to social protection and benefits that are currently largely denied to informal workers.
Supporting worker organizations and unions is crucial for empowering sanitation workers to advocate for their rights and improve their working conditions. Such organizations can serve as a bridge between informal operators and government bodies, raising awareness of the benefits of formalization and campaigning for better pay and conditions.
Improving contracts, legal recognition, and access to financial and social services are essential steps. This includes ensuring adherence to national labor laws and providing access to loans and bank accounts, which can enhance financial security and enable workers to invest in better equipment or healthcare.
Promoting **inclusivity in the sector**, by actively encouraging and supporting the participation of women and people with disabilities, can also lead to more equitable and safer working environments.
Finally, **public awareness campaigns** are vital to reduce the pervasive social stigma associated with sanitation work. By highlighting the essential public service provided by these workers, such campaigns can foster greater respect and dignity for the profession, thereby improving their psychosocial well-being and reducing discrimination.

6. Conclusions and Recommendations

The analysis unequivocally demonstrates that sanitation workers in Zambia perform an indispensable public service, yet they operate under profoundly challenging and hazardous conditions. Their efforts are critical for public health, directly mitigating the spread of waterborne diseases like cholera, which frequently plague the nation. However, a significant portion of this workforce, particularly those in informal roles, faces heightened vulnerabilities due to a severe lack of protection, exposure to a multitude of biological, chemical, and physical hazards, and the debilitating impact of social stigma. Systemic gaps in infrastructure, comprehensive training, and robust legal enforcement perpetuate these unsafe and undignified working environments. To address these critical issues and ensure the safety, health, and dignity of sanitation workers in Zambia, the following comprehensive recommendations are put forth:

6.1. Policy and Legal Reforms

- **Formalize the Informal Workforce:** Implement clear policies and legal frameworks that facilitate the formalization of informal sanitation workers. This must include providing legal recognition, stable employment contracts, and access to social protection schemes such as health insurance, pensions, and worker compensation. This is not merely an administrative step but a fundamental human rights and public health imperative.
- **Update and Strengthen Legislation:** Urgently review and update the Factories Act, Chapter 441, and the Occupational Health and Safety Act of 2010 to ensure they are comprehensive, modern, and explicitly cover all types of sanitation workplaces, including informal operations, emerging technologies, and a broader range of occupational hazards. The scope of application should be widened to include all workplaces, such as hospitals, where sanitation work is performed.
- **Enhance Regulatory Enforcement:** Strengthen the capacity of the Ministry of Labour and Social Security's Occupational Safety and Health Services Department and other relevant regulatory bodies to effectively monitor and enforce occupational health and safety standards across the entire sanitation sector. This requires adequate funding, human resources, and punitive measures for non-compliance.

6.2. Infrastructure Investment and Mechanization

- **Invest in Safe Infrastructure:** Prioritize investment in adequate Faecal Sludge Treatment Plants (FSTPs) and proper disposal facilities to eliminate unsafe dumping practices. This includes ensuring sufficient office and parking spaces for sanitation companies and workers, which contributes to their dignity and operational efficiency.
- **Promote Mechanization:** Facilitate the transition from manual, high-risk sanitation tasks to mechanized solutions wherever feasible. This includes providing modern vacuum trucks and other mechanical equipment for pit and septic tank emptying, as well as machinery for sewer cleaning and maintenance, to reduce direct contact with hazardous waste and minimize physical strain.
- **Improve Workplace Design:** For tasks that remain manual, implement ergonomic improvements in workplace design and provide appropriate tools to reduce musculoskeletal strain and acute injuries.

6.3. Occupational Health and Safety Provisions

- **Mandatory PPE Provision and Training:** Ensure the consistent and free provision of high-quality, appropriate Personal Protective Equipment (PPE) for all sanitation workers, tailored to specific tasks and hazards. This must be coupled with mandatory, regular training on the correct use, maintenance, and disposal of PPE, emphasizing its critical role in protecting against biological, chemical, and physical risks.
- **Comprehensive Health Monitoring and Vaccinations:** Establish and enforce programs for regular, periodical medical check-ups for all sanitation workers to monitor their health status and detect occupational diseases early. Ensure all workers receive necessary vaccinations against common occupational illnesses, including but not limited to Tetanus, Hepatitis A, Hepatitis B, Cholera, and Typhoid.
- **Specialized Safety Training:** Develop and implement specialized safety training programs, particularly for confined space entry (e.g., sewers, septic tanks), focusing on hazard identification (especially toxic gases), ventilation procedures, rescue protocols, and the use of gas detection equipment.
- **Basic Hygiene Promotion:** Reinforce basic hygiene practices such as handwashing with soap and water after work and before meals, and encourage immediate bathing and uniform washing upon returning home to prevent pathogen transmission to families.

6.4. Social and Economic Support

- **Ensure Fair and Stable Wages:** Advocate for and enforce policies that guarantee fair, stable, and timely remuneration for all sanitation workers, including those in informal employment. This will improve their financial security and reduce the need for hazardous coping mechanisms or prioritizing basic needs over safety.
- **Facilitate Access to Financial Services:** Implement programs that help informal sanitation workers access formal financial services, such as bank accounts and microfinance loans, to improve their economic stability and enable investment in their health and safety.
- **Combat Stigma and Discrimination:** Launch sustained public awareness campaigns to educate the general population about the essential and dignified nature of sanitation work. These campaigns should aim to dismantle social stigma, foster respect for sanitation workers, and highlight their critical contribution to public health and national development.
- **Provide Psychosocial Support:** Recognize and address the psychosocial burden on sanitation workers, including work-related stress, discrimination, and the use of harmful coping mechanisms. Provide access to counseling and mental health support services tailored to their unique occupational challenges.

6.5. Collaboration and Data Management

- **Strengthen Inter-Agency Coordination:** Foster stronger collaboration and coordination among government ministries (e.g., Ministry of Labour and Social Security, Ministry of Water Development and Sanitation, Ministry of Health), local authorities, international development partners, NGOs, and private sector entities involved in sanitation. This ensures a holistic and integrated approach to improving worker safety and health.

- **Support Worker Organizations:** Actively support the formation and strengthening of sanitation worker unions and associations. Empower these organizations to effectively represent workers' interests, negotiate for better conditions, and engage with policymakers.
- **Improve Data Collection and Reporting:** Establish robust systems for collecting disaggregated data on sanitation worker demographics, occupational injuries, illnesses, fatalities, and access to health and safety provisions. This data is crucial for evidence-based policy making, targeted interventions, and monitoring progress. By implementing these comprehensive and interconnected recommendations, Zambia can move towards a future where its indispensable sanitation workers are not only recognized for their vital contributions but are also fully protected, healthy, and able to perform their duties with dignity and safety. This will not only improve the lives of these workers but also significantly strengthen Zambia's public health resilience and accelerate progress towards sustainable development goals.