

Policy Brief E-Waste and Harm to Ghana Population

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Abstract

Ghana has become a popular destination for electronic waste, or e-waste, which many members of the population rely on as a subsistence generating income source.

Unfortunately, there are few safe ways of disposing of such waste in Ghana, which contains harmful chemicals and toxins. These toxins pose risks to both the health of Ghanaians and the local environment.

The generation of e-waste has significantly increased concurrently with the latest advancements in technology. Some nations, such as the United States, have laws in place that regulate the disposal of e-waste, but Ghana does not. In turn, a large amount of e-waste ends up in landfills, which allow toxins such as mercury and lead to seep into the soil. In turn, said pollution can contaminate water sources, and ultimately food resources consumed by both humans and livestock. The threat of exposure leaves an already vulnerable nation susceptible to severe health problems, such as cancer.

A part of the proposed solution is to develop methods for the safe disposal of e-waste. This includes creating a formal e-waste industry and recycling program. This industry will benefit from safety and regulatory guidelines that protect everyday people from harmful exposure. A new workforce can be formalized and funded by materials sourced from e-waste such as copper. In addition, Ghana should limit the amount of e-waste that is dumped in the country by outside nations.

In short, the problem of e-waste in Ghana is currently putting the nation's future in jeopardy and needs to be addressed. Attention must be given to establishing a formal e-waste

management system. In addition, regulations and safety measures should be implemented by developing sound policies by the government.

Problem

Electronic waste (e-waste) is the discarded electronic materials from technological devices. There is an ongoing challenge with the disposal of unwanted electronics. E-waste contains dangerous toxic chemicals that naturally leach from the metals when buried or burned. A large majority of e-waste is disposed of in landfills. When buried in the ground, the toxic chemicals can leak into groundwater and streams. In 2014, 41.8 million tons of e-waste were disposed of across the globe (Heacock et al., 2016). The handling and disposal of e-waste in underdeveloped countries are often dangerous to the health of the public and lead to contaminated environments. Harmful chemical exposure impacts the health of vulnerable populations.

Countries in Africa have become the destination of e-waste from large, developed nations. In Ghana, Africa, a lack of e-waste regulations and safety measures for e-waste workers fosters a dangerous environment and heightens the risk for serious health complications (Akormedi et al., 2015). So much e-waste is shipped to Ghana, it has become a livelihood for many members of the population. E-waste scavenging has become a common way for citizens to make money when there are no jobs available. Ghana's e-waste dismantled activities generate US\$105-268 million annually and represent the livelihood of at least 200,000 out of 29.12 million people nationwide (Daum et al., 2017). People in Ghana are exposed to the toxic chemicals in technological devices. The toxins are in the air, water, and soil.

The human health risks come from the toxin in the technological devices including; “mercury, lead, cadmium, polybrominated flame retardants, barium and lithium” (Bandow et al. 2015, p. 136). These toxins leak into groundwater and are absorbed by many organisms in the water such as seafood. Research into fish species in Ghana identified high concentration levels of toxic metals, indicating e-waste contamination in the food supply. Consuming fish with high concentration of toxic metals can lead to many types of health risks including cancer (Bandow et al., 2015). Trace metals in foods are a danger to the population. Contaminated water supplies can impact clean drinking water, crops, and livestock.

Along with impacting the food supply, failing to properly dispose of e-waste threatens the health of the population. Research indicates toxins in e-waste impact the nervous and reproductive systems (Asampong et al., 2015). When the toxins enter these systems, they can lead to disorders, disease, and birth defects. Pregnant women face the risk of miscarriage or a stillborn (Wu et al., 2012). More citizens are seeking out healthcare for respiratory disorders and various other health complaints. Exposure to e-waste can lead to chronic health conditions and shorten the lifespan of the population. The only way to correct the current problem is through proper waste management and responding to the health needs of the population.

Background

Since the start of the 21st century, there has been a growing demand for electrical and electronic equipment. As the demand grew, the lifespan of technical and digital products becomes shorter (Hossain et al., 2015). At the same time, there was a lot of waste requiring solutions to waste management. In the United States alone, 80 million devices were sold creating a mass amount of e-waste (Hossain et al., 2015). When Americans and other global

citizens buy new electronics, they no longer need their older, outdated devices. The end result is a lot of e-waste.

As the volume of technological devices grows, so does the e-waste problem. The solutions for most developed nations are to ship old devices to underdeveloped nations. Components of electronic products can contain toxic substances and other components can be recycled into new devices (McCullen et al., 2019). The e-waste that is not sent to be dismantled is placed in landfills (McCullen et al., 2019). The short lifespan of electronic devices only contributes to the growing waste problem. The hazardous materials dismantled by the e-waste worker pose health risks (McCullen et al., 2019). Additionally, e-waste poses an environmental and health risk.

E-Waste has components that are toxic and do not biodegrade (McCullen et al., 2019). Many European countries have banned e-waste from landfills due to the danger to the environment and public health. The toxic chemicals in the e-waste have been connected to developmental defects in newborns and cancer (Houston, 2017). Research has linked toxic chemicals in e-waste like polychlorinated biphenyls (PCBs), in the breast milk of mothers in Ghana. Estimated hazard quotient (HQ) revealed that all mothers had HQ values exceed the threshold of 1 for PCBs, indicating potential risk to their children (Asante et al., 2011). The challenges associated with the disposal of these products have resulted in an ineffective response. The solution for many developed nations is to send the waste to vulnerable, developed nations (Li & Achal, 2020). Other solutions have been to dump waste in oceans or bury it deep in the ground.

Current public outrage and international response to climate change have resulted in new avenues to get rid of this waste. The new e-waste recycling and refurbishing industry relies on vulnerable nations, like Ghana, to dismantle e-waste to reuse the various parts (Reddy, 2015). Ghana also has a larger population of citizens using technology. Used technology not wanted by larger countries is sent to Ghana (Akormedi et al., 2015). Waste workers will take technological devices they find in the dump and dismantle them for the parts. Citizens have developed an innovative way to survive extreme poverty through enterprise (Oteng-Ababio et al., 2016). They are exposed to harmful toxins when dismantling these products. As a larger percentage of the population begins to produce e-waste the problem of managing E-waste only grows.

Analysis

Accra, Ghana has the most toxic dump in the world. A lack of proper regulations, controls, and monitoring involving the informal handling and recycling practices of many Ghana citizens has only heightened the risk for exposure to dangerous toxins that can lead to serious health complications. A 20-acre junkyard in the heart of Accra, Ghana is a major source of pollution for the city (Agyei-Mensah & Oteng-Ababio, 2014). Electronic scavengers will burn the electronic device on-site to obtain the copper and other valuable parts. burning the toxic chemicals located in the device creates dangerous air pollutants.

Electronic waste workers in Ghana are vulnerable to illness and injury (Nukpezah et al., 2014). Exposure to toxic chemicals leads to diseases of the respiratory tract, headaches, body pains, and other serious health consequences (Rautela et al., 2021). Despite the known dangers to the population, there is a lack of regulation. In recent years, the country has taken efforts to

implement programs designed to support local communities manage waste. The Ghana e-Waste Country Assessment has developed an initial framework to address the flow of e-waste (Oteng-Ababio et al., 2016). The health impact of e-waste disposal has created awareness about the environmental impacts of improper disposal.

The study found Ghana needs to establish an institutional framework to control the importation of used technological devices, create a policy on general importation and management, and develop a legal framework for the regulation of waste recycling (Oteng-Ababio et al., 2016). The country also needs to establish a formal e-waste recycling and dismantling industry to protect the health and safety of workers. Lastly, the country needs to develop an enforcement agency similar to the Environment Protection Agency (EPA) to regulate the e-waste industry and protect the health and safety of workers.

The United States has legislation regulating the proper disposal of E-waste at the state level. The (EPA) partners with nations across the globe to develop effective ways to manage global e-waste (Stephenson et al., 2016). The agency supports global efforts to control the flow of global e-waste. In the state of Indiana, manufacturers are required to take ownership of their e-waste and recycle the parts (Stephenson et al., 2016). The disposal of e-waste is the responsibility of the manufacturer. Failure to properly collect and dispose of waste can result in large fines for the manufacturer.

Ghana needs to develop policies to regulate the disposal of e-waste. The U.S. has developed environmentally safe methods for disposing of e-waste. For example, since 2007, companies in the US are required to notify the EPA before exporting cathode-ray tubes (CRT) according to EPA CRT rule due to the harmful lead content. The country needs safer handling

and disposal of e-waste and regulations to reduce the risk of public health. A formal e-waste recycling and dismantling industry and laws regulating the disposal of e-waste are needed. The U.S. regulates the disposal of this waste with legislation. The National Computer Recycling Act, Resource Conservation and Recovery Act, and laws regulating battery disposal protect the public from exposure to e-waste (Stephenson et al., 2016). Without greater regulation, citizens in Ghana will be exposed to toxic waste.

Recommendations

Policy recommendations for Ghana include creating a formal e-waste management system that includes proper disposal. Instead of the current informal economy, e-waste can become a formal industry (Grant & Oteng-Ababio, 2021). The parts in technological devices can be safely dismantled and sold to technology manufacturers creating a profitable and safe industry. While many Ghanaians rely on the copper they source from e-waste, the burning of old technical devices is harmful to human health and the environment. The country will need adequate training programs to equip informal operators with technology (Grant & Oteng-Ababio, 2021). Low-skilled e-waste workers will need to train to safely source recycled parts from old technical devices.

Secondly, the country needs to develop policies on the safe disposal of e-waste. The country will need to develop solid waste management practices to create a safer waste disposal environment (Grant & Oteng-Ababio, 2021). A new policy framework can help curb poor urban waste management practices resulting in better health outcomes for the population. Multilevel solid waste management interventions are critical to changing the current e-waste practices (Grant & Oteng-Ababio, 2021). Without sustainable solutions, a larger portion of the population

will experience negative health effects. An important part of the policy response must include addressing the current health consequences to the population and implementing preventive care practices such as implementation of information, education and communication to help Ghana people. E-waste has already created a negative impact on population health. Policy responses must address the impact of e-waste on the health of the population.

Lastly, the government needs to regulate manufacturers that bring their e-waste to the country. Manufacturers dropping their e-waste in Ghana should be required to support efforts to safely recycle these products. Binding contracts should be established requiring the manufacturer to buy back the recycled parts. The country has established safe ways to recycle e-waste and created a formal industry. Ghana is poor and needs the recycling of e-waste for survival, regulating the industry could boost the economy while reducing the risk to human health.

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