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A Chemical Curse or Blessing? A Case of Kenya

Abstract

Misuse and overuse of chemicals is one of the most complex issues facing the contemporary Kenyan society. Agrochemicals in particular pose as a great risk to the population when not used according to their ascribed directives. At times, chemicals are misused unintentionally and casually due to ignorance and this may have dire consequences on one's health or that of the environment. While some make personal choices on how to use certain chemicals, some just happen to be victims of circumstances when other persons within our sphere of influence have made poor choices, and we all end up suffering the consequences.

Key Words: Chemicals, Misuse, Agrochemicals, Adulteration, Economic Growth

Introduction

Misuse and overuse of chemicals is one of the most complex issues facing the contemporary Kenyan society. The Kenyan farming communities misuse agrochemicals in their bid to maximize profits by applying the wrong dosages to control diseases and pests on livestock and crops. Agrochemicals are not the only ones misused since most other chemicals are misused as well. Take for instance a cup of coffee or tea. While the recommended intake is one or two cups a day, some of us end up taking a whole 1-litre flask or more thus eventually ending up as caffeine junkies. These beverages that rather seem harmless contain chemicals which alter the chemical balance in our brains and quickly induce dependencies in their consumers. House cleaning products and other domestic hygiene products are misused too. Even though many chemical products have clear labels directing their usage and dosage, many consumers seldom read label instructions on usage. We get used to these chemicals such that we do not bother to check the labels even when we make new purchases. It is advisable that

we must follow the label instruction on the storage, use and disposal of chemicals in whichever form.

How About Deliberate Adulteration of Vaccines and Foodstuff?

Deliberate misuse and abuse of chemicals is where one is aware of the effect of a particular chemical but nevertheless goes ahead to use it in the wrong way or against directions on the label. While some of the chemicals are intended for good use such as food preservation, some cause unintended negative effects against the public when used in high dosages.

In 2017, there were reports that hit the media headlines in Kenya where the tetanus vaccine was allegedly laced with chemicals that would potentially render the mothers infertile. In other instances, we have heard of babies and children dying after becoming vaccinated while others get their limbs amputated. The Catholic church in Kenya has actively raised such issues alleging that vaccines are being used to achieve ill motives. Unfortunately, these allegations are swept under the carpet as mere political propaganda and a conclusive report is never released to the public. Is the Kenyan society a victim of chemical weaponry? are vaccines instruments of death that are meant to harm our people? These are some of the pertinent questions we need to ask as a society. Some of the chemicals we consume are mutagens that can potentially alter our genetic makeup. Some of the lethal genetic changes are heritable and will be passed from generation to generation weakening our resilience. Others are carcinogens causing numerous forms of cancers that continue to plague our nation. History is replete with examples of misuse of medicinal chemicals that had dire consequences for the consuming populations. Thalidomide, a drug that was prescribed to pregnant women during the 60s, which unfortunately caused birth defects such as phocomelia or malformation of limbs ^[1]. Chemicals are meant to be therapeutic and to help make life easier, more often, they become toxicants that ruin our lives and that of future generations when improperly used. Continuous consumption of food laced with harmful agents results in chronic illness due to the bioaccumulation of such

agents in our body ^[1]. Prescription pharmaceutical products are similarly misused. A case of ignorance among the users as well as lax regulatory environment that fail to monitor the sale and distribution of these chemicals results in development of superbugs which are harder to control. Consumers need not be experts in the pharmacodynamics or pharmacokinetics of therapeutic agents, but should keenly follow the prescription requirements and dosage regimens recommended by the healthcare providers.

Recently the country news outlets have reported the lacing of consumables with harmful chemicals by scrupulous traders that often sell products to unsuspecting consumers. For instance, the news report on the presence on mercury in imported sugar that was sold locally in Kenya. A case of artificial yoghurt manufactured from starch, corn syrup among other things was reportedly selling in Nakuru county. Preservation of fresh milk using hydrogen peroxide and formalin among other chemicals has also been reported. A more recent report was the presence of unsafe levels of sodium metabisulphite in meat products sold in our supermarkets and various outlets in Kenya, which are meant to extend shelf life and change the appearance of meat in order for it to appear fresh. Sulphites are inorganic salts used as food preservatives but they were long prohibited by the US Food and Drug Authority (FDA) since 1986. The laxness in the regulatory environment in African nations fail to promptly monitor such malpractices before they occur ^[1]. This ends up harming our productive workforce and even compromising the welfare our future economy. With the heightened global health concerns on the use of chemical additives, reports of chemical laden products and intentional food contamination are serious malpractices that deserve serious legal penalties (UNEP 2018) ^[5]. The government institutions such as the Kenya Bureau of Standards and other regulatory authorities should remain vigilant to point out such malpractices through chemical analysis of food products and instill proper measures to curb the potential health threats. The policymakers

should also formulate measures that aim to raise public awareness, develop sound regulatory framework and early warning systems in order to safeguard the public health^[2].

The Question of Agrochemicals and Economic Growth

Given the pivotal role of agriculture in our economy, the demand for pesticides continues to grow with the expanding agricultural sector. The Pest Control Products Board (PCPB) under the *Pest Control Products Act*, revised in 2012 is the government body that registers and regulates the number and type of pesticides in the country. Despite the mandate to register/ deregister pesticide products, there are many obsolete and banned pesticides circulating in the country. There are also reports of the use of organochlorine pesticides in the flower farms located near Lake Naivasha where the residents and the environment have suffered effects of lethal dosages and bioaccumulation of the pesticides as the result of the pest control products in the region ^[3]. Many other cases go unreported. Previous studies^[2] have reported the high presence of chemical residues in agricultural produces which is detrimental to the unsuspecting consumers. In fact, many chronic health conditions can be traced back to the cumulative effect of consumption of such chemical-laden foodstuff which may cause multiple toxicities. It is often difficult to assess the extent of exposure to such harmful chemicals due to the lack of proper diagnostic facilities in the country compounded by other factors such as lack of adequate resources ^[4]. Farmers Need to be educated on proper and judicious use of agrochemicals including how to use information on the product labels, application methods and timings as well as proper disposal of agrochemicals.

Economies should develop responsibly in such a manner that does not harm the health of nations nor that of the future generations. This can be achieved by implementing chemical management measures through the public and private sectors as well as the establishment of chemicals database to monitor the use or misuse of chemicals within the wider African context. The authorities placed at the border entry points should be keen to inspect imports and

especially food imports should so as to prevent entry of contaminated food products into the country. There are several chemical conventions that have been established to regulate the distribution, use and disposal of chemicals in order to safeguard the health of the human population and that of the ecosystem. Of interest, the Bamako Convention was established in 1998 by African nations in order to regulate the importation and disposal of stockpiles of hazardous waste within our borders. This was in response to failure of the Basal Convention to protect the developing nations from trading or importing toxic waste from the industrialized countries^[3]. Africa is the cradle and the future of mankind. It is our collective responsibility to protect the health of the nation and safeguard its rich ecological diversity. “You don’t have to think like a toxicologist to be an expert on chemical safety and toxic risks (Schiefer et al., 1997)^[1].” Let’s all steer the African economic growth in the right direction, by making informed choices on the appropriate use of chemicals in everyday life.

Reference

1. Schiefer, H.B., D.G. Irvine, and S.C. Buzik, *Understanding toxicology: Chemicals, their benefits and risks*. 1997: CRC Press.
2. Machekano, H., et al., *Cabbage or ‘pesticide’ on the platter? Chemical analysis reveals multiple and excessive residues in African vegetable markets*. 2019. **6**(1): p. 2.
3. Loha, K.M., et al., *Import, disposal, and health impacts of pesticides in the East Africa Rift (EAR) zone: A review on management and policy analysis*. 2018. **112**: p. 322-331.
4. Manyilizu, W.B., *Pesticides, Anthropogenic Activities, History and the Health of Our Environment: Lessons from Africa*, in *Pesticides, Anthropogenic Activities and the Health of our Environment*. 2019, IntechOpen.
5. The United Nations Environment Programme (UNEP). 21 Dec 2018. *Chemicals & Waste Efforts are underway towards sound chemicals management in Kenya*. Retrieved from <https://www.unenvironment.org/news-and-stories/blogpost/efforts-are-underway-towards-sound-chemicals-management-kenya>