

THE NewsHawks

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Exposed: Highly hazardous agro-chemicals flood Zim... urgent need for sustainable agro-ecology

Brezh Malaba

Under pressure to improve crop yield, Zimbabwean farmers are increasingly relying on synthetic fertilisers and chemical pesticides, but some are using banned products which are smuggled into the country, with dire implications for the environment and human health.

This new investigation by The NewsHawks shows that, while synthetic fertilisers and chemical pesticides have been necessitated by the need to boost food production as well as curb crop pests and diseases, the proliferation of highly hazardous agro-chemicals is posing catastrophic dangers which now require the decisive intervention of policymakers, farmers and wider society.

Banned Pesticides

The Department of Research and Specialist Services at the Harare Agricultural Research Centre is the national regulator of pesticides.

The Fertiliser, Farm Seeds and Remedies Act [Chapter 18:12] and Statutory Instrument 144 of 2012 (Pesticide Regulation) regulate the trade in agro-chemicals.

The banned pesticides in Zimbabwe include paraquat, aldicarb, monochrotophos and alachlor.

Pesticides can be categorised into insecticides, dips, fungicides, herbicides, rodenticides, growth stimulants and anthelmintics.

By 1990, it was estimated that Zimbabwe's agricultural sector was using pesticides worth US\$20 million-US\$30 million per annum. The market has since expanded considerably in the last 30 years.

In terms of registered pesticides in Zimbabwe, there are 483 active ingredients and 800 formulations. Of these, 44 pesticides have been classified as highly hazardous.

Paraquat, a highly hazardous pesticide (HHP), is banned in Zimbabwe. But our investigation can reveal that the deadly chemical is being openly sold on the streets.

Paraquat – commonly peddled under the Gramoxone trade name – is widely used as a herbicide (plant killer), primarily for the control of weeds.

When ingested by humans, the pesticide is highly toxic, causing acute respiratory distress syndrome, renal failure, hepatotoxicity, and pulmonary fibrosis. It has also been linked to Parkinson's disease. Together with rat kill, paraquat is also a poison of choice for people who commit suicide because the toxic dose is low; just two teaspoons (10 millilitres) are enough to kill.





Paraquat Smugglers

This investigation was given exclusive access to the findings of an investigation into highly hazardous pesticides. The NewsHawks is publishing the detailed findings for the first time. The investigation was jointly instituted by the UN Food and Agriculture Organisation (FAO) and the government of Zimbabwe.

The study covered five provinces, namely Mashonaland Central, Mashonaland East, Masvingo, Manicaland and the Midlands.

Paraquat is predominantly smuggled into Zimbabwe from Zambia. Unlike Zimbabwe, the neighbouring country has not outlawed the highly hazardous pesticide. Anyone can travel to Zambia, buy paraquat and smuggle the chemical into Zimbabwe across the notoriously porous borders.

Shumirayi Muhera, a crop protectionist in the state-run Agricultural Research and Innovation Development Directorate, says the smuggling has become very worrying.

"We asked farmers where they're getting paraquat. They smuggle it into the country, especially via Zambia. Since Zambia is still using paraquat, it's easy for smugglers to bring it into Zimbabwe."



Temik menace

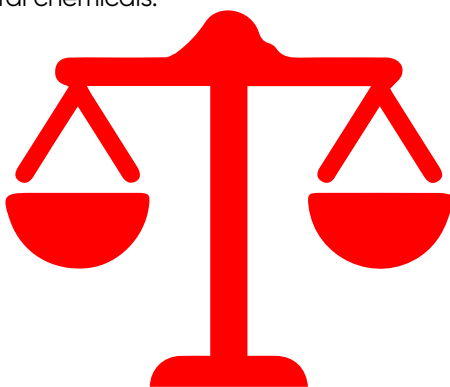
Another banned agro-chemical which has flooded the streets is aldicarb, a carbamate insecticide which is the active substance in the pesticide Temik. Classified as a super toxin, the extremely dangerous pesticide is effective against aphids and spider mites, among other pests, but it is used primarily as a remedy against nematodes.

Potato and cotton farmers find aldicarb useful. Aldicarb is also widely sold on the streets as rat kill for domestic use, with vendors openly boasting that it eliminates rodents "ipapo ipapo/khonapho khonapho (instantly)".

Journalists from The NewsHawks found Temik being sold at many places in Harare, Gweru and Bulawayo – on the underground market as well as at both registered and unregistered retail outlets.

Agro-dealers in downtown Harare told our news crew that most pesticides sold by unregistered retailers are smuggled into Zimbabwe from Zambia and South Africa. Some the chemicals originate in Europe, China, India and South Africa.

"We get the pesticides from our suppliers who, in turn, are mostly supplied by cross-border dealers," said a retailer of agricultural chemicals.



Double standards

Dichloro-diphenyl-trichloroethane (DDT) is one of the 44 highly hazardous pesticides in Zimbabwe. Although the government knows the dangers of this chemical, the ministry of Health and Childcare continues using DDT to combat malaria.

By definition, highly hazardous pesticides are those agro-chemicals acknowledged to present particularly high levels of acute or chronic hazards to health or environment, according to the World Health Organisation's internationally accepted classification system.

A medical scientist in the government service told The NewsHawks that it defies logic that the authorities continue allowing the use of DDT for indoor residual anti-malaria spraying.

"Every scientist knows that DDT causes severe and irreversible harm to health. It also harms the environment in very profound ways. It should be completely banned."



Flourishing underground market

There is a flourishing underground market for toxic pesticides and synthetic fertilisers in places like downtown Harare and Mbare.

In flagrant disregard for regulations, both licensed and unlicensed agro-dealers in Zimbabwe are making a killing from paraquat. Despite the government's efforts to curb the hazardous herbicide's circulation, downtown Harare and the bustling Mbare area have become hotspots for this illegal trade. This exposé unveils the alarming reality surrounding the illicit paraquat sales flourishing within these urban areas.



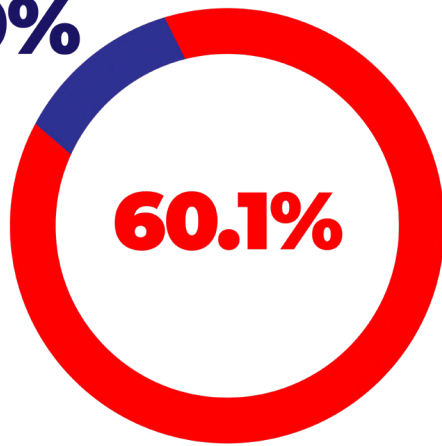
Deadly contraband

Nestled within downtown Harare's narrow alleys and clandestine corners, an underworld of illegal paraquat trade has established its roots. Under a shroud of secrecy, both licenced and unlicensed dealers discreetly offer this hazardous substance to eager buyers, disregarding the potential consequences. Capitalising on the desperation of farmers searching for potent agro-chemicals, these rogue vendors risk the lives of unsuspecting individuals, motivated solely by lucrative gains.

The bustling and vibrant Mbare – a place where informal trade thrives – has unfortunately also become a hotspot for the illegal paraquat trade. Unscrupulous individuals, taking advantage of the surging demand for affordable agricultural inputs, are brazenly selling outlawed pesticides.

Defiant agro-dealers

39.9%



39.9%60.1% Taming the menace

The unchecked circulation of highly hazardous pesticides casts a dark cloud over Zimbabwe's agricultural industry. It is imperative for the government to strengthen efforts to eradicate this illegal trade and educate vulnerable communities about the severe health risks associated with exposure to toxic agro-chemicals. To ensure the well-being of the nation's farmers and safeguard public health, a collaborative approach encompassing stringent enforcement, public awareness campaigns, and viable alternatives must be prioritised. Only then can Zimbabwe pave the way towards a safer and more sustainable agricultural future.

Storage and disposal

There are problems associated with the handling, storage and disposal of highly hazardous pesticides.

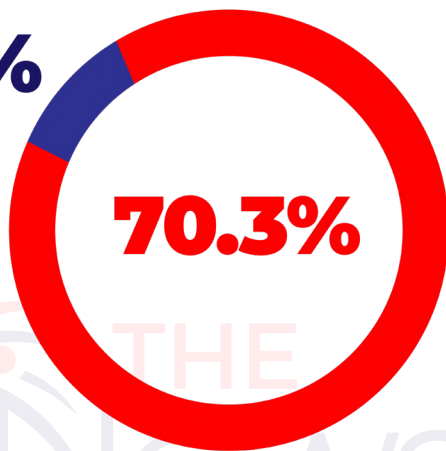
The detailed study shows that 44.7% of farmers store pesticides indoors, in their residential houses. This exposes the farmers and their families to dangerous chemicals.

Retailers, who should know better about the risks of agro-chemicals, are equally culpable. Only 43.2% of retailers have a designated place where purple triangle and red triangle pesticides are stored under lock and key as required by Pesticide Regulations.

Shops are storing aluminium phosphide, a deadly purple-label pesticide, on shelves, alongside food, cosmetics, groceries, clothes and cellphones. Such reckless conduct is criminal. In terms of the Pesticide Regulations, aluminium phosphide must be stored securely under lock and key.

Disposal of empty containers and expired agro-chemicals is posing serious threats to human health and the environment. Some farmers simply dig a pit, dump the chemicals and cover with soil. Others just burn the containers. The extremely reckless ones simply dump the containers in dams and rivers.

29.7%



This investigation can reveal that 60.1% of the 148 retailers interviewed were registered, while 39.9% were not registered. Failure to register is a violation of the Fertilisers, Farm Feeds and Remedies Act [Chapter 18:12] of 1996.

What makes the unregulated sale of agro-chemicals more dangerous is that only 29.7% of the retail shops were manned by personnel with the required agricultural qualifications, while the majority (70.3%) had no relevant qualification.

Retailers – even those that are registered – are taking too many shortcuts, placing public health and the environment at risk. For instance, pesticides are categorised by colour code: green, amber, red and purple. In terms of the law, anyone can purchase a "green triangle" pesticide.

Pesticides with amber, red and purple colour triangles must only be sold to people with demonstrable experience or training in the handling of pesticides. But the stark reality is that many retailers are selling deadly "purple triangle" pesticides to anybody, over the counter, with no questions asked.

Despite the government's continuous efforts to eradicate the illegal paraquat trade, the resolute underground market in places like downtown Harare and Mbare remains robust and defiant. The authorities have conducted multiple raids, attempting to dismantle these networks of deceit and danger. However, the fluid nature of the underground market and the ingenious tactics employed by the unlicensed dealers has rendered these suppression efforts highly ineffective.

Kenneth Chipere,
principal
research officer
in the Fertilisers,
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and Remedies
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Kenneth Chipere (pictured), a principal research officer in the Fertilisers, Farm Seeds and Remedies Institute, says all stakeholders—including farmers, policymakers and retailers—must now step up to the plate and help devise mitigation strategies to ensure that disposal is done properly. This is one of the recommendations emanating from the ground-breaking study into highly hazardous pesticides.

Tragic consequences of ignorance

A young farm worker in Zimbabwe died after handling chemical pesticides with his bare hands without protective wear. His job was to tend roses and other flowers on the farm. Fellow workers wrongly attributed his death to witchcraft. After the young man died, the employer replaced him with another worker. But barely two years later, the second worker died, too. By this time, the workers on the farm were totally convinced that witchcraft was behind the mysterious deaths.

This investigation recounts the startling tragedy, as narrated by Shumirayi Muhera (pictured), a crop protectionist in the state-run Agricultural Research and Innovation Development Directorate.



Shumirayi Muhera, crop protectionist in the state-run Agricultural Research and Innovation Development Directorate.

Double tragedy

When the first young farm worker tragically lost his life after handling chemical pesticides without protective wear, his untimely death led the local community to erroneously attribute the cause to witchcraft. His job of tending roses and other flowers on the farm was considered more prestigious by locals than the dreary manual labour which most workers were subjected to. After the death of the first worker within barely a year of cultivating flowers, the employer replaced him with another worker. Tragically, the second worker died too, barely a year after inheriting the cushy job. Beliefs of witchcraft are very strong in Zimbabwean society; the farm workers were convinced that the two employees were bewitched by envious sorcerers for their plush jobs.

The brutal truth was only unearthed by agricultural researchers who later established that the two workers actually succumbed to toxic pesticides and not witchcraft as believed by locals. The deceased employees, it was discovered, were routinely handling chemical pesticides with their bare hands. They would later proceed to drink tea or have lunch without thoroughly washing their hands and, in the process, ingest traces of the deadly chemicals.

Muhera says this incident sheds light on how ignorance about the proper handling of agro-chemicals can result in death. It was not witchcraft that killed the farm workers, but rather the lack of knowledge and protective measures required for safely working with these toxic chemicals.

Livestock herd perishes

Muhera also recounts a recent heart-rending incident in which a family in the Nkayi area of Matabeleland North province was left devastated after losing 21 cattle valued at US\$9 000 following a breakdown in communication which resulted in a dangerous grain protectant being wrongly administered on the livestock.

The cattle were administered a tablet each of aluminium phosphide which is ordinarily used for fumigating stored grain, seeds and tobacco. Aluminium phosphide, commonly known as "rat pills", is a restricted fumigant. The loss of the 21 cattle was a major setback for the family.

Highly hazardous pesticides

The importance of proper handling cannot be overemphasised.

Agro-chemicals, including pesticides and fertilisers, are essential tools in modern agriculture. They help control pests and diseases, improving crop yield and food production. However, these chemicals can also pose significant health and environmental risks if handled carelessly.

Lack of awareness

One of the main factors contributing to the young farm workers' tragic deaths was a lack of awareness regarding the potential dangers of agro-chemicals. Many farm workers and smallholder farmers do not receive proper training on the safe handling and use of these deadly chemicals. Such knowledge gaps can have severe consequences, as these tragic incidents show.

Protective measures

The importance of using protective wear when handling agro-chemicals cannot be overstated. These substances can be harmful if they come into contact with a person's skin, eyes, or respiratory system. Unfortunately, the farm workers in question did not have access to or knowledge of the necessary protective gear, leading to disastrous consequences.

Deadly exposure

When the farm workers came into direct contact with the pesticides, their bare skin absorbed the toxic chemicals, posing an immediate risk to health. Prolonged exposure or repeated contact led to acute poisoning, with severe health implications and ultimately death.

Debunking the myths

Despite the tragic nature of the farm workers' deaths, it is essential to debunk the misguided notion that witchcraft played a role. Illiteracy and superstition often result in blaming supernatural elements for inexplicable occurrences. However, science can provide a rational explanation for such incidents, in this case, with a focus on the hazardous properties of agro-chemicals.

Education is key

To prevent similar tragedies from occurring in the future, efforts must be made to educate the communities about the safe handling of agro-chemicals. Raising awareness about the potential dangers and promoting responsible agricultural practices will help protect the lives of those involved in farming, ultimately ensuring a safe and sustainable future for all. Better still, highly hazardous pesticides should be phased out. Alternatives, such as bio-pesticides, can be used.

International community negligent

Most of the highly hazardous agro-chemicals being sold in Zimbabwe are made outside the country and smuggled in. For instance, mancozeb, a highly toxic agricultural fungicide, comes from Europe, China, India and South Africa.

The European Food Safety Authority has repeatedly confirmed the health and environmental dangers of the agro-chemical. It is banned in Europe but—tragically—those same European countries which do not allow the chemical's use on their soil are conveniently turning a blind eye when their companies export it to Africa. The double standards are astounding.

The organic farming proposition



In the lush landscapes of Zimbabwe, a wave of enthusiasm is sweeping through the ranks of smallholder farmers. With earth-stained hands and hearts filled with a passion for sustainable agriculture, these rural farmers, predominantly women, have embraced an exciting chapter – organic farming. Their commitment to producing food untainted by toxic chemicals speaks volumes of their dedication to healthier, more sustainable practices.

One such community that is taking organic farming seriously is in Goromonzi district, Mashonaland East province. The locals are receiving crucial training in agro-ecology from Fambidzanai Permaculture Centre, a home-grown private voluntary organisation that has created Zimbabwe's largest independent network of organic farmers. The crops grown by the local farmers are impressive in their diversity, yield and quality – including maize, beans, sorghum, millet, groundnuts, roundnuts, and even medicinal herbs. The smallholder farmers narrated their experiences to The NewsHawks.

Amidst the tough challenges faced by the determined local farmers, a pressing obstacle casts a shadow on their dreams – the lack of viable markets and the inability to export their organic produce. As the sun-soaked fields bloom with verdant crops, an unsettling paradox unfolds: while the farmers sow seeds of change, uncertainty threatens to choke their harvest.

Akunata Mavheneke (pictured), a farmer from ward 12 in rural Goromonzi, says many are interested in organic agriculture. However, when farmers struggle to make money from their toil, some of them soon give up and go back to using chemical fertilisers and hazardous pesticides.

"We adopted organic farming because it is healthy. We don't use chemical fertilisers or pesticides. We use manure to fertilise the crops and we use natural methods of controlling pests. Also, our soil remains productive, it's not polluted and the nutrients are not depleted," she explains.



Goromonzi organic farmer Akunata Mavheneke.

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"We adopted organic farming because it is healthy. We don't use chemical fertilisers or pesticides. We use manure to fertilise the crops and we use natural methods of controlling pests. Also, our soil remains productive, it's not polluted and the nutrients are not depleted," she explains. Another organic farmer, Everin Madhava, tells The NewsHawks that food producers need support.

"We need assistance in terms of marketing our produce. The type of agriculture we're practising here is special. We do not use chemical fertilisers or pesticides. We believe we're safeguarding the health of the community through these clean farming methods."

Winnie Nyoka, another local farmer from ward 11, says she first ventured into organic agriculture more than 30 years ago.

"When we started practising organic farming, we were producing food for mainly our families and the local community. But we later began selling some of the produce to Harare and other places. What we need now is to penetrate the export market. We need assistance in terms of organising ourselves into groups and venturing into exports," says Nyoka.

The European and US markets, widely regarded as bastions of demand for organic produce, remain tantalisingly out of reach for these aspiring organic farmers. The key to unlocking these lucrative markets lies in certification – a stamp of approval that legitimises their produce's organic status. However, the absence of official certifications casts doubt on the authenticity of their offerings, rendering them ineligible for export. Organic certification is not their only headache; the volumes of their harvests are often modest, meaning they must either scale up their crop production or team up with fellow farmers and aggregate their produce

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Kudzana Mashigaidze (pictured) the executive director of Fambidzana Permaculture Centre, tells The NewsHawks that his organisation is involved—together with other stakeholders—in the development of a comprehensive agro-ecology policy for Zimbabwe.

As part of promoting agro-ecology and other sustainable agricultural practices, Fambidzanai encourages farmers to stick to traditional, indigenous seed varieties for crops such as sorghum and millet, rather than being lured into taking up untested seed that often proves risky.

“There are quite a number of reasons why we should go back to our traditional crops. The major one is that they’re adaptable to our local environment. When we grow them, even if we’re going to experience climate change issues, not all of the crop will be affected by climate change because they’re adaptable. Secondly, the nutritive value of our local crops is much better than foreign crops.”



Kudzanaï Mashingaidze, the executive director of Fambidzanai Permaculture Centre

But why did Zimbabweans generally abandon their local crop varieties in the first place?

“Multi-national seed companies advertise their seed varieties and have huge advertising budgets. Our local foods are not being advertised and they’re not being promoted, but we know very well that traditional crops do much better than foreign crops. There is a need for us to go back to basics,” says Mashingaidze.

Undeterred by adversity, these resilient rural farmers persevere, exhibiting a tenacity that belies their limited resources. They pour their energies into nurturing their crops and adopting sustainable agricultural practices, carefully avoiding synthetic fertilisers and chemical pesticides while embracing organic fertilisers instead.

Their dedication to producing wholesome, chemical-free food resonates with health-conscious consumers globally. Sadly, the disconnect between their untamed ambitions and the stumbling blocks they face presents a disheartening paradox.



Jeroth Phiri, an organic farmer from Goromonzi in Mashonaland East province, displays his organic produce.

“We don’t use chemical fertilisers or pesticides. We make compost using cattle manure, chicken manure and crop residue,” says Jeroth Phiri, an organic farmer based in Goromonzi.

Beyond the challenges of certification, another significant hurdle these farmers encounter is the lack of essential support. Infrastructure deficiencies, such as reliable transportation networks and cold storage facilities, leave their harvests vulnerable to spoilage, impacting both quality and shelf life. Furthermore, limited access to financial resources hinders investment in adequate irrigation systems and advanced farming technologies, stifling productivity and widening the gap between their aspirations and reality.

While their efforts are commendable, it is evident that these rural farmers deserve more comprehensive support. Meaningful intervention is imperative to address the barriers that erode their hopes of securing a sustainable livelihood. Equipping these farmers with the technical assistance required to meet rigorous organic certification standards and facilitating access to domestic and international markets would undoubtedly amplify their impact and uplift their communities.

In this journey towards a brighter future, collaboration is vital. The potent combination of governmental initiatives, NGO involvement, and private sector partnerships holds the potential to transforming these smallholder farmers into key players in the organic market. Empowering them with the necessary resources, knowledge, and support will not only enable access to global markets but also contribute to poverty alleviation, gender equality, and ecological stewardship.

As the sun sets over the verdant fields of Goromonzi during a visit to the area by The NewsHawks, the spirit of these women farmers burns brightly, undeterred by the trials they face.

Their enthusiasm for organic farming radiates hope, promising a greener and more inclusive future – one that acknowledges their efforts and secures their rightful place within the global organic community. Through collaborative efforts and unwavering support, it is everyone's collective responsibility to ensure that these rural farmers have the opportunities and recognition they so profoundly deserve.



Farmers' enthusiasm for sustainable agricultural practices is remarkable, but the government and other stakeholders must provide support.

Is organic farming elitist?



Our investigation can reveal that most farmers – especially smallholder operators who often lack exposure to new methods, strategies and training – are finding it difficult to venture into viable organic farming. Currently, commercial organic farming is seen as a niche and elitist pursuit, beyond the reach of the average Zimbabwean farmer.

The Zimbabwe Organic Producers and Promoters Association (Zoppa), a national movement that brings together producers, promoters and processors for the development of the organic agricultural sector, says farmers are showing enthusiasm, even in the face of challenges.

In an exclusive interview with The NewsHawks (NH), Zoppa's executive director, Fortunate Nyakanda (FN) (pictured), explains the work they are doing:



Fortunate Nyakanda, the executive director of the Zimbabwe Organic Producers and Promoters Association (Zoppa), says farmers are keen on embracing sustainable agro-ecological practices.

- NH:** How does Zoppa's certification system for organic farming operate and are there procedures that farmers must follow to be certified?
- FN:** Organic produce is not organic until it is certified organic. Therefore, the basis for organic certification is compliance to organic standards. Farmers should have organic standards knowledge, they should know how to apply them and to comply with them.
- NH:** Are Zimbabwean farmers keen on embracing organic farming?
- FN:** Farmers are quite keen to embrace organic farming due to its low entry barrier. Impacts of climate change, soil degradation and high costs of inputs have been major reasons to embrace organic farming.
- NH:** Are there any policy issues or legal shortcomings which the country should address in order to broaden the practice of organic farming?
- FN:** Yes, some of these are:
- support on research and development in the area of organics,
 - increasing extension support (and this starts with revolutionising agriculture education to embrace organic agriculture).
 - Support on other support services especially development of the input sector; organic seeds, organic fertilisers/biofertilisers, etc.
 - Including organic sector in national agriculture statistics.
- NH:** What are the effects of chemical fertilisers and pesticides on soil health, the environment and human health?
- FN:** (a) Soil: Soil microorganisms that continuously work on soil are killed, hence the physical properties of soil are destroyed.
- b) Environment: Ecosystem is destabilised, leading to pest outbreaks
- c) Human health: human health is risked as farmers apply chemical inputs, and as consumers consume chemical residues in the produce, and as chemical inputs are washed into water bodies which is consumed.
- NH:** As an organisation, what opportunities have you identified in organic farming that may enable Zimbabwe to attain sustainable food security?
- FN:** Organic farming presents an opportunity to produce food with locally available resources. It also offers the opportunity to increase food diversity.
- NH:** Are there incentives for Zimbabwean farmers to shift from harmful agro-chemicals to agro-ecologically sustainable methods of farming?
- FN:** Premium price levels are normally a function of demand vis-à-vis production levels. However, in the absence of premium prices, organic farmers have an opportunity to access niche markets, and prices in niche markets are always better.
- NH:** Are there practical examples of local farmers who have transformed their organic farming projects into commercially viable ventures?
- FN:**]There is a number of farmer groups that are working with outgrowers' schemes for the export market.



In most cities around the world, whenever a first-time visitor arrives, the local residents are quick to impart words of advice, as if by instinct and on cue.

In Johannesburg, they will warn you about the frightening crime levels; in Washington DC they remind you of expensive hotel accommodation; in Lagos the traffic congestion is the stuff of legend. Harare has its own peculiarities, too. When you travel to the Zimbabwean capital for the first time, you are likely to be warned: Do not drink the tap water.

The poor quality of piped water is a serious public health concern, with far-reaching consequences for locals. In 2008–2009, a cholera epidemic in Zimbabwe – with Harare as the epicentre – resulted in 98 585 reported cases and 4 287 deaths.

Harare's major source of raw water is Lake Chivero, located 32 kilometres downstream of the city.

The city's then mayor, Jacob Mafume, told The NewsHawks in an exclusive interview that Harare's water system faces many challenges, including pollution.

"Our water system is based on the recycling concept. Lake Chivero was built downstream of Harare. Lake Chivero then becomes heavily polluted—not only by industrial actors but also by the City of Harare itself. Our water reticulation system is based on cleaning the water as it goes into Lake Chivero and then re-using it. That creates demand for more chemicals to clean the water, not only in terms of the number of chemicals but also the volume of chemicals that you need."

Owing to the high level of pollution, the City of Harare uses nine (and up to 13) chemicals to purify the raw water drawn from Lake Chivero, at massive cost to the financially strained city council.

"We use about nine chemicals. It's not normal, it's very costly. It comes up to about US\$3 million per month. And that doesn't even clean the quantity of water that we need. We [as a city] have an installed capacity of 700 megalitres and at our maximum we can go up to 450 megalitres, with the supply of chemicals that we have. The demand for water in Harare is around 1 200 megalitres per day, but we're only able to go to a maximum of 450 megalitres per day because of the shortfalls and the cost of chemicals that we have to use, and the coagulant, aluminium sulphate, which we get in granular form or as liquid aluminium sulphate."

But the city's purification plants – including the largest one Morton Jaffray Water Works – are themselves feeding into a vicious cycle of pollution. In the process of purifying water polluted by agro-chemicals, industrial chemicals and sewage effluent, the local authority is itself discharging toxic chemicals into the water catchment area.

A study by University of Zimbabwe scientists Norah Muisa, Zvikomborero Hoko and Portia Chifamba found that the aluminium in the residues from Morton Jaffray Water Works is, in turn, affecting the water quality of Manyame River and Lake Manyame. Alarming levels of aluminium have been detected in sediment, fish tissue and water.

"Metals are non-biodegradable and are considered as major environmental pollutants causing cytotoxic, mutagenic and carcinogenic effects in animals.

"Effects of aluminium toxicity in fish include increased mortality, changes in feeding habits, genetics, growth and physiology as well malfunctioning of gills. Aluminium toxicity in humans has been linked to neurological disorders such as dialysis encephalopathy and onset of Alzheimer's disease."



Chemical fertiliser conundrum

Two companies, Zimbabwe Phosphate Industries Ltd (Zimphos) and Zimbabwe Fertiliser Company Ltd (ZFC), which are subsidiaries of Chemplex Corporation, manufacture chemical fertilisers on a sprawling factory plant on the fringes of Harare's Msasa industrial zone. Chemplex is owned by the Industrial Development Corporation of Zimbabwe, a national development finance institution established through an Act of Parliament and wholly owned by the government of Zimbabwe.

The fertiliser manufacturing process requires huge volumes of water. Zimphos and ZFC draw water from the nearby Cleveland Dam.



The water at Cleveland Dam is pristine, before it is polluted and discharged into Harare's troubled catchment area.

"At Cleveland Dam, all the water that is there is taken by Zimphos for the chemical fertiliser manufacturing. Zimphos is a heavy user of water," Mafume told our investigators.

He conceded that Zimphos is a "major polluter", a reality also confirmed by the Environmental Management Agency (Ema). Fertiliser manufacturing contributes to the pollution of Mukuvisi River, one of Lake Chivero's three major tributaries. "It [Zimphos] is also a major polluter, and is using old technology to produce the chemicals," said Mafume.

The grotesque irony is that although the fertiliser manufacturers rely on some of the cleanest raw water in Harare – from Cleveland Dam – the effluent from their factories finds its way into the city's water catchment area, feeding into a cycle of pollution. It is fair to point out that the fertiliser-making companies are not the only polluters of Mukuvisi River. Industrial pollution is attributed to many other players – and the problem is worsened by the City of Harare's shambolic trade waste disposal system which has largely crumbled and is in urgent need of overhaul.



A quarry at Zimphos, on the boundary between Msasa industrial zone and Epworth. Nearby residents complain that the water from their wells is toxic as a result of pollution, and the area experiences perennial crop failure

Have there been any attempts by the City of Harare to hold major polluters accountable?

"Yes, we have tried. There's Ema, which is supposed to punish them. We also have to measure the extent of the pollution. But there are challenges there because of the incapacity of Ema, the equipment and the policing impact and the dual-authority jurisdiction. Part of the environmental laws are being superintended to by Ema and part of the other environmental laws are superintended to by the City of Harare."

Ema's penalties for pollution have generally proven ineffective as the fines lack deterrence.

An Ema inspector told The NewsHawks: "The fines differ according to the applicable scale, but even a fine equivalent to US\$5 000 is really not deterrent to a big company which is making profit."



City of Harare equally culpable

While the City of Harare says it is determined to see to it that the major polluters are brought to book, the local authority lacks the capacity to take decisive action. More worryingly, though, the city council is also a major contributor to pollution, by failing to responsibly manage trade waste. Trade waste is all non-human liquid waste generated on commercial properties which is discharged into the sewerage system.

An environmental conservation expert told The NewsHawks that Harare's outdated and dilapidated sewerage system makes it difficult to efficiently manage the trade waste produced by factories. The downside of this is that the city council is potentially losing millions of dollars in waste disposal levies which should be paid by companies.

"The city council's sewerage system is broken down. Factories are unable to channel their effluent into the dilapidated pipes and, because of this, council is losing out on substantial revenue by way of waste disposal levies for trade waste," said the environmentalist.

The fines, denominated in the increasingly worthless Zimdollar, are not deterrent, as they are routinely eroded by runaway inflation. Like the ineffectual Ema, the city council has also failed to leverage on technology in the fight on toxic chemicals.

"The major polluters should have a responsibility. We're going to tighten our monitoring mechanisms. We're also going to mete out heavy punishment on those who are polluting."

Where's the Environmental Management Agency?

Liberty Mugadza, Ema's principal environmental education and publicity officer, says Zimphos is not the only polluter in Harare.

"The level of pollution in Mukuvisi [River] is very bad, but not because of the contribution of one polluter. It's quite a lot of things that are happening. We can say Mukuvisi is one of the troubled waters. The river passes through where there are a lot of activities—legal and illegal. The likes of Zimphos, they do pollute, but it's known that they exist. But there are other players who are small, some of whom are not known and some who just come and do a particular activity and disappear."



Mukuvisi River is heavily polluted, posing serious health and environmental risks.



The water from some wells in Epworth is toxic, with residents complaining bitterly about pollution associated with fertiliser manufacturing, including the stunting of crops.

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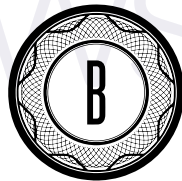
CONCLUSION

Farmers' high dependency on synthetic fertilisers and chemical pesticides is a ticking time bomb. The environmental degradation, health hazards, unsustainable practices and economic vulnerabilities associated with this dependency highlight the urgent need for a transformative shift towards sustainable and organic farming practices. The country is facing a growing burden of non-communicable diseases such as cancer, diabetes and hypertension. Pollution of the food chain by agro-chemicals heightens the risk—and some researchers are now speaking anecdotally about the possible link between the rising cancer burden in Zimbabwe's "grain belt" and the widespread use of highly hazardous pesticides.

The Zimbabwean government—working together with farmers, agro-dealers, medical and environmental experts—must adopt measures towards the phasing out of highly hazardous agro-chemicals. Pesticide and fertiliser registration regulations are long overdue for review. The Environmental Management Agency must now step up to the plate and protect the environment without fear or favour and in the national interest. There is no healthy nation without healthy soil, healthy rivers and healthy food.

Efforts to promote awareness, provide training and support a transition to sustainable agriculture are imperative to mitigate the impending catastrophe and secure a resilient and prosperous future for Zimbabwe's strategic agricultural sector.

This work was conceived and created by Brezh Malaba, Bertha Foundation Fellow 2023, with the support of the Bertha Foundation and produced by The NewsHawks. Pictures by Brezh Malaba, Design by Tapiwa Nyakabau



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