Poison in our Coffee – Executive Summary

Why This Report Matters

The coffee industry's pesticide use is poisoning both people and the planet.

Coffee is one of the world's most beloved commodities, with 2.2 billion cups consumed every day. Yet behind this daily ritual lies a hidden crisis: the global coffee sector has become deeply dependent on pesticides that endanger farmers, contaminate ecosystems, and leave residues that can persist all the way to the consumer's cup.

Coffee is now one of the most pesticide-intensive crops in the world—reliant on many Highly Hazardous Pesticides (HHPs) linked to cancer, neurotoxicity, reproductive harm, endocrine disruption, biodiversity collapse, and long-term environmental degradation.

The report documents workers collapsing in fields after spraying, vomiting, struggling to breathe, some hospitalized, then returning to work as soon as they physically could because they cannot afford not to.

This is the first comprehensive synthesis showing how the global coffee sector is structurally dependent on Highly Hazardous Pesticides—and that this dependency is harming farmers, ecosystems, and consumers alike. It exposes the regulatory double standard that allows banned chemicals to be exported and re-imported as residues. This report brings together evidence from Brazil, Vietnam, Kenya, Colombia, and other major producing regions to expose the scale of pesticide use in coffee, the human and environmental harms it causes, and the regulatory failures that allow this system to persist– while also potentially exposing coffee consumers to a toxic cocktail of pesticide residues in every cup.

The report also outlines a path forward—one that centers agroecology, farmer safety, and global accountability. In essence, this is a roadmap for transitioning toward a safer, more just, and more sustainable coffee system.

Scale and frequency of pesticide use

Much global data on coffee and pesticides is missing or hidden. Where data exists publicly, it reveals staggering chemical intensity.

Brazil, the world's largest producer, used 19.8 million liters of pesticides on coffee in 2015 alone—3.8% of all pesticides sold nationally. Coffee receives more pesticides per hectare than maize or soy, and pesticide sales continue to rise. Vietnam, the second-largest producer, has seen agricultural pesticide use increase 3- to 5-fold in 25 years, with coffee ranking second only to rice although rice occupies far more land. In Kenya, coffee accounts for 27% of national pesticide use despite occupying far less land than staple crops.

Farmworkers in these systems face repeated exposure: fungicides are sprayed up to 20 times per season, insecticides up to 19 times, and herbicides up to 10 times—exposing farmworkers to repeated toxic contact throughout the year.

Climate Change Is Making Everything Worse

As traditional shade-grown agroforestry coffee systems have been replaced by full sun monocultures, pest pressure has intensified, soils have degraded, and the world's 25 million coffee farmers have become increasingly reliant on chemical inputs simply to maintain yields.

Climate change is accelerating this dependency: Rising temperatures and erratic rainfall intensify pest and disease outbreaks, pushing farmers toward even heavier pesticide use. This creates a vicious cycle: climate stress → more pests → more chemicals → degraded ecosystems → even greater vulnerability. Agrochemical companies profit; farmers and ecosystems pay the price.

A Double Standard in Global Trade

The report exposes a stark regulatory hypocrisy: pesticides banned in consuming countries are still exported to coffee-producing countries, where oversight is weaker. A chemical banned for use becomes a residue that is tolerated for coffee imports. This double standard—where substances deemed too dangerous for domestic use are sold abroad and re-enter consumer markets as residues—shifts health and environmental risks onto producing countries while playing Russian roulette with consumers' health.

Human Toxicity: Highly Hazardous and banned pesticides dominate coffee

Many of coffee's commonly used pesticides are hazardous. Across Brazil, Kenya, and Colombia, at least 159 active ingredients are registered or used in coffee production, of which:

- 60–77% are Highly Hazardous Pesticides (HHPs)
- 59% are banned in the European Union
- 14 are WHO Class 1A/1B (extremely or highly hazardous)
- 22 are carcinogenic or probably carcinogenic
- 40 are reproductive toxicants or endocrine disruptors
- 29 are neurotoxic, with prenatal exposure harming children's brain development

- 12 appear on the Rotterdam Convention's Prior Informed Consent list, meaning they require explicit approval before export—yet they remain widely used on coffee farms.

These chemicals are linked to cancer, endocrine disruption, miscarriages, infertility, neurotoxicity, Parkinson's disease, and acute poisoning symptoms such as "dizziness, vomiting, blurred vision, and respiratory distress."

Glyphosate: a case study in systemic failure

Glyphosate, classified as "probably carcinogenic to humans" by the WHO's IARC, remains deeply embedded in coffee production. Despite global litigation around severe alleged harms of glyphosate and billions in damages awarded to exposed workers, glyphosate use has not declined in coffee. Brazil alone has 164 registered glyphosate products approved for coffee. Kenya ranks glyphosate as the second-most used pesticide in coffee. Glyphosate residues have been detected in green coffee beans across multiple countries. One ray of light stands out: Vietnam's 2021 ban on glyphosate demonstrates that regulatory action can rapidly reduce residues and shift practices.

"Toxic cocktails" linger in consumers' cups, with unknown health effects

Farmers and farmworkers are being poisoned

Farmers, farmworkers and rural communities face the highest exposure. Pathways include mixing and spraying chemicals, re-entering fields too soon after application, contaminated water, drift from neighboring farms, and residues on clothing and equipment. Acute effects include poisoning, respiratory distress, skin burns, and neurological symptoms. Chronic exposure is linked to cancer, reproductive harm, endocrine disruption, neurodevelopmental disorders, and long-term organ damage. Children, pregnant women, and older workers are especially vulnerable.

The "protection gap"—lack of training, protective equipment, medical care, and regulatory enforcement—magnifies these risks.

In the Dominican Republic, 87% of coffee farmers reported not wearing masks or gloves when they spray. In India, 2/3 of coffee workers used no protective measures at all during pesticide application. Investigative reporting from Brazil found workers on large commercial plantations spraying wearing only their own clothes, without the protection the law requires.

The industry has spectacularly failed in almost every country to monitor worker health, and the true burden of occupational illness for farmers and farmworkers remains invisible. But what evidence we have gathered indicates a lethal story.

Brazil's coffee heartland tells the story with uncomfortable clarity: In 2012, official records from Minas Gerais which produces roughly half of Brazil's coffee, recorded 21 pesticide deaths and 817 agricultural poisonings. Those numbers represent a fraction of reality. A Danwatch survey of 412 coffee workers in the same area found that 59% reported at least one acute poisoning symptom, more than 200 people in a single study area, far exceeding the official statewide total.

Broader research estimates that up to 88% of farmworker pesticide illnesses go undocumented. The pattern documented in Brazil repeats across every major coffee-producing region. Research in Tanzania, Kenya, the Dominican Republic, Vietnam, Nicaragua and Costa Rica consistently finds high rates of acute poisoning symptoms among coffee workers.

Coffee farmers face particularly high exposure due to frequent applications. A single growing season can involve up to 20 fungicide applications; 19 insecticide applications; and 10 herbicide applications, primarily glyphosate and paraquat. Workers handle these substances repeatedly — mixing, spraying, and returning to treated fields, often without precautions, for years, and even across entire careers. The health consequences that emerge from this level of exposure are serious and wide-ranging: neurological disorders, reproductive harm, cancer, respiratory disease, organ damage, and mental health conditions.

Research suggests that *drinking* coffee may reduce the risk of Parkinson's disease for consumers — but some of the pesticides used to *produce* it can cause the very condition that coffee appears to help prevent, for farmworkers.

Environmental Damage: Water, Soil, Biodiversity

Coffee is contributing to our mass extinction crisis. Pesticides used in coffee contaminate water sources, degrade soil health, and drive biodiversity loss. Runoff pollutes rivers and groundwater. Soil microbial communities are disrupted, reducing fertility and resilience. Pollinators and beneficial insects—critical for ecosystem balance—are decimated by toxic exposures. The cumulative ecological damage undermines long-term agricultural sustainability and threatens the very ecosystems coffee depends on. This report documents how pesticides commonly used in coffee production are highly toxic to ecosystems:

- 46 active ingredients are very toxic to bees, threatening pollination
- 48 are very toxic to fish, contaminating rivers and watersheds
- 18 are toxic to beneficial insects essential for natural pest control
- 11 are toxic to earthworms, undermining soil health

Water contamination is widespread, soils degrade under chemical pressure, and biodiversity collapses in monoculture landscapes.

Widespread use of chemical fertilizers compounds the problem: nitrogen-based fertilizers emit nitrous oxide (N_2O), 273 times more potent than CO_2, significantly increasing coffee's climate footprint.

In Brazil's Mantiqueira Range, researchers identified a 44.7% probability of surface water contamination from common coffee pesticides, with 24 different substances regularly detected in waterways near plantations. In Colombia, pesticide residues were detected in 81.3% of surface water samples taken from coffee-growing regions, including already-prohibited substances such as DDT and endosulfan alongside currently used pesticides like chlorpyrifos.

Pesticides also reach water systems through a route that receives far less attention: the washing of sprayers and tanks, and the discharge from coffee processing facilities themselves. Pulping, fermentation, and washing operations all generate effluent that can carry significant pesticide concentrations into surrounding waterways. Even after treatment, coffee wastewater retains pesticide residues at concentrations sufficient to threaten aquatic life. Studies have confirmed both phytotoxic and cytogenotoxic effects, and removal attempts since 2013 have produced unsatisfactory results, pointing to the need for fundamentally different processing technologies.

Pesticides wipe out species whose existence is vital to the healthy soils that coffee needs to grow, such as earthworms and pollinators. Their deaths not only contribute to our mass extinction crisis, but also to yields dropping and to financial loss. Studies show that excluding both birds and bees from coffee plants reduced yields by an average of 24.7%, equivalent to a loss of over US$1,000 per hectare. Of the pesticides currently used in coffee production, 64% are either very toxic or moderately toxic to bees. Ironically, the coffee industry is losing money by poisoning the species that it needs to thrive.

A Path Forward: Real Solutions Exist, but require systemic change

The report emphasizes that the crisis is solvable. Agroecological farming, shade-grown systems, integrated pest management, and diversified cropping can dramatically reduce pesticide use while improving yield, resilience, soil health, and biodiversity. These solutions require:

- Stronger regulation
- Investment in farmer training and action for transitions to agroforestry and climate-resilient systems
- Coffee-purchasing policies that reward low-chemical production
- Closing loopholes to stop exporting banned pesticides for coffee
- Mandatory residue testing on coffee to protect consumers

Consumers must demand transparency. Regulators must enforce meaningful standards.

Conclusion: A call to action

The evidence is clear: coffee's pesticide problem is systemic, global, and urgent. It harms farmers, ecosystems, and consumers, and it is exacerbated by climate change and regulatory double standards. The stakes are high: the health of millions of farmers, the integrity of ecosystems across the tropics, and the safety of a beverage consumed by billions. The world cannot afford to ignore the poison in its coffee. But solutions exist. Every cup of coffee can be part of the solution. The question is whether the industry, regulators, and consumers are ready to demand one.