The Influence of Environmental Toxicity, Inequity and Capitalism on Reproductive Health

2022

Allison Grossman
Kelley Dennings
About This Paper

Our health and the environment are deeply interconnected. The exploitation of people, animals, and nature drives the environmental crises we face today and damages the health of the most marginalized people. Reproductive health, specifically, is affected by poor environmental quality, making it difficult for parents to have healthy pregnancies and raise their children in safe and healthy communities. Improving environmental conditions results in positive public health outcomes and is essential for achieving reproductive justice.

Many invisible environmental threats — such as toxic chemicals in the air and water and extreme temperatures — impede reproductive justice and cause harm to pregnant people, fetuses, infants and children. This paper explores how industrial agriculture — driven by capitalism — effects reproductive health.

This is just one chapter in a much larger report, The Influence of Environmental Toxicity, Inequity and Capitalism on Reproductive Health. The report seeks to help people understand the links between environmental harm and reproductive harm more clearly. It also explores the role capitalist systems play in undermining reproductive and environmental health and hopes to demonstrate that in order to achieve reproductive justice we must overhaul extractive and exploitative systems to help people and the planet thrive.

By exposing the connections between industrial agriculture and negative reproductive health outcomes such as infertility, low sperm counts, interruptions in menstrual cycles, high-risk pregnancies, early pregnancy loss, birth defects, preterm birth, and low birth weight, we hope to increase awareness of the invisible threat of industrial agriculture, illuminate the role of capitalist growth models in causing harm, and propose solutions for mitigating the ongoing reproductive injustice caused by this environmental crisis.

Visit the website to view the full report, including the chapters on fossil fuel extraction, plastic products and climate change.
Industrial Agriculture

The Issue

Industrial agriculture has become a primary source of endocrine-disrupting chemicals. Toxic runoff, containing pesticide residue and livestock waste and components, can contaminate food sources and pollute the air, water and soil. This runoff seeps into streams, lakes and groundwater, contaminating drinking water and creating toxic algal blooms that are deadly for people, pets and wildlife. Toxic runoff is consumed by fish and farmed animals that pass these toxicants on to the humans who eat them. Pesticides and animal manure are sprayed onto crops, polluting the air of neighboring communities, and are carried home on the skin and clothing of agricultural workers, outdoor laborers, and people living nearby. Improper storage and disposal processes of animal waste are common in the industry and expose nearby communities to toxicants and other pollutants.

Animal Agriculture

Animal feces and urine are stored in large lagoons and then pumped onto nearby fields for fertilizer. This manure is often sprayed in excess, leading to high levels of runoff and contamination of the water and soil nearby. The lagoons also frequently leak, rupture, or are overfilled. The mismanagement of these lagoons further enhances the toxic exposure from factory farms to nearby communities, which are disproportionately neighborhoods of Black, Indigenous and people of color.

The improper disposal of animal bodies is also a source of toxic pollution that affects neighboring communities. Farmed animals are incinerated, gassed, shot, or buried in unlined ground burial sites, often without public transparency or proper regulation, causing significant environmental damage. These practices pollute the air and water with nitrates, ammonia, pharmaceuticals fed to animals, and other disease-causing composites, which are then consumed or inhaled by people and wildlife.

The vast majority of animal agriculture (more than 90% globally and 99% in the United States) is produced in large-scale industrial facilities known as concentrated animal feeding operations (CAFOs) or factory farms, where the animals are given antibiotics to prevent illness or infection from overcrowded, unhygienic conditions.

While giving antibiotics to treat sick animals is productive, the majority of antibiotics used in agriculture are fed to animals, along with steroid anabolic growth promoters, to boost their growth and alter their nutrient composition. Antibiotics are given to healthy animals at low doses to promote increased production, while steroid growth promoters interact with an animal’s hormones specifically to increase the growth of the animal. About 65% of medically important antibiotics in the United States are sold to farms and used indiscriminately in feed and water. As a result of the widespread use of these pharmaceuticals in animals, bacteria is growing resistant to commonly used antibiotics. When these bacteria then show up in humans via common illnesses such as pneumonia or tuberculosis, antibiotics are less effective in treating them. And antibiotics used to treat simple ailments like mild lacerations can be less effective. The World Health Organization has called antibiotic resistance one of today’s biggest threats to global health and food security.
Pesticides
The system of industrial animal agriculture and associated monocrops used as feed inherently requires toxic pesticides, which contaminate nearby communities. Pesticides are deliberately created to kill fungi such as plants and animals that impede agricultural production, and therefore harm any wild animal, insect or plant that could interfere with the growth of the agricultural operations’ product or profits. For example, pesticides are applied to fields to destroy native plants and local species, sprayed inside facilities to kill rodents, and applied to the animals themselves to control parasites. These processes do not exist in a vacuum and have devastating effects on non-targeted wildlife, from pollinators to predators, as well as humans — particularly those who work in agriculture or live near agriculture operations and are regularly exposed to these chemicals.

There are more than 16,000 registered pesticides, and new chemicals are being created all the time in the United States. Not all have been comprehensively tested for their full toxicity before going to market. Atrazine, for example, is a widely used herbicide and EDC and has been found in 94% of U.S. drinking-water samples. Its widespread presence in waterways and surface water poses severe reproductive health threats to wildlife, such as disrupting the sexual growth of amphibians. Atrazine has also been shown to have more severe health effects when it interacts with other pesticides in the environment, leading to a complicated and ever-evolving mix of toxic chemicals.

Even pesticides that have been tested and banned continue to accumulate over time. The insecticide DDT, for example, continues to be found in animals and humans over 30 years after it was banned. While this report specifically focuses on land agriculture, it’s important to note that toxicants, including mercury and other persistent organic pollutants, also build up in aquatic animals, contaminating wild fish and the people who eat them. Approximately 60% of the rivers and streams in America’s agricultural regions have levels of pesticides deemed harmful for aquatic life. In urban areas, the contamination rate is closer to 90%.

This paper aims to provide a brief, introductory overview of the relationship between industrial agricultural operations and reproductive justice. It does not intend to cover the complex, comprehensive harms caused by the agriculture industry.

The Reproductive Health Harms of Industrial Agriculture

Animal Agriculture
Industrial animal agriculture’s overuse of antibiotics is a threat to global and reproductive human health. In fact, antibiotic resistance impedes the treatment of about 2.8 million people in the United States every year and kills approximately 35,000 people. Antibiotic resistance is especially concerning for pregnant people and increases risk of medical complications for parent and child. For example, urinary tract infections (UTI), which are regularly resolved with a simple round of antibiotics, become increasingly dangerous with antibiotic resistance. Without effective antibiotic intervention, a urinary tract infection can lead to preeclampsia, premature birth, and birth defects. Though historically simple to treat, the most common antibiotics for combatting UTIs during pregnancy have become less effective in recent years, increasing the danger of this formerly easy-to-treat ailment.
Infections that are particularly dangerous for reproductive health and frequently treated with antibiotics, such as gonorrhea, are becoming especially hard to treat as antibiotic resistance has grown.

Beyond just sexual health, antibiotic resistance also harms vulnerable children and infants who rely on basic medicines. Currently, children and infants are experiencing growing antibiotic resistance, making it harder to utilize previously effective medicines to treat their illnesses. This shift further challenges parents’ ability to keep their children safe, as dictated by the principles of reproductive justice.

**Pesticides**
Pesticides are often composed of endocrine disrupting chemicals that directly affect reproductive health, exposing those closest to industrial agricultural operations to severe harm. The degree of risk is often dependent upon both duration of exposure and toxicity of the chemical, with pre- and postnatal periods for pregnant people shown to be particularly sensitive to pesticide exposure.

*Atrazine has been linked* to reduced male fertility, increased risk of miscarriage, birth defects and low birth weight in babies, and breast cancer in mothers.

Arsenic, which previously was a pesticide and remains in soil and water, increases the likelihood of miscarriage, stillbirth and preterm birth. It also interrupts reproductive function in females by disrupting puberty, menstrual cycles, and ovulation. Puberty is also affected by pesticides, which cause abnormal mammary gland development in young girls, potentially leading to breast cancer and difficulty nursing later in life.

Pesticide exposure causes multigenerational damage to individual and communal health. Like other endocrine disruptors, these agricultural chemicals cross the placenta and affect fetal development. Complex mixtures of agricultural pollutants have been found in umbilical cord blood, and *in utero exposure has been linked* with childhood cancers, ADHD, delayed cognitive skills and poorer hand-eye coordination compared to those living farther from pesticide spraying.

The ability to breastfeed or chestfeed has been particularly harmed by agricultural chemicals, with pesticides like atrazine reducing the length of time a pregnant person can lactate after giving birth.

As a result, a person exposed to high levels of pesticides may have to stop nursing their child earlier than they’d like. This impedes their ability to provide the care they wish for their baby and contributes to infant food insecurity as breast milk can be an affordable and nutritious food source for low-income families. Nursing helps to prevent malnutrition and contributes to food security for the whole family in times of crisis.
Agricultural pollutants also contaminate breast milk. Indigenous communities most exposed to these toxicants have found their breast milk contaminated by pesticides, forcing them to either pass these contaminants onto their babies while nursing or to stop nursing altogether. Breast milk is economically beneficial and can have profound health benefits on the development of the baby. Breast milk evolves with the baby, meets new nutritional requirements as the child grows, and leads to decreased illness and a healthier immune system. While there are many valid reasons parents may not nurse their children, preventable environmental disruptions should not stop those who want to and are able to.

**How Industrial Agriculture Is Linked to Capitalism and Inequity**

The harm of agricultural toxicants is multifaceted. Lack of testing, limited regulation of chemicals, and scarce protection for those exposed to agricultural chemicals all compound the dangerous effect of industrial agriculture on reproductive justice. Testing, regulations and safety require a commitment of time and money and have largely been pushed aside by policymakers and corporations to prioritize financial gain. As a result, human and animal health is sacrificed in the pursuit of new and more profitable agricultural chemicals.

It’s important to note that more than half of U.S. industrial crop production is not grown for human consumption but rather for animal feed to increase the profit of animal agriculture industries. In this system, industrially grown crops are used to speed up the time it takes to get farmed animals to slaughter weight and maximize the enormous profits of meat corporations. These examples highlight the implications of market capitalism throughout the industrial agriculture sector.

If growth continues to be seen as the primary measure of economic health, humans will continue to be exploited, and the environment pushed past its carrying capacity, to generate private profit.
Lack of Testing

Testing for the safety of many pesticides has been inadequate and fails to account for the full range of harms these chemicals cause. The active ingredients of a product are often the only ones tested. Adjuvants, which are chemicals added to the active ingredients of agricultural toxicants to increase their effectiveness, are rarely tested in experiments that decide exposure regulations. Yet these adjuvants can amplify the toxicity of their active principal ingredient up to 1,000 times. Claims that adjuvants don’t need to be tested serve the profit-maximizing endeavors of industry but drastically harm those exposed to the toxicants.

Very little research has been done on the reproductive effects of adjuvants, further enhancing the harm of industrial agriculture on reproductive justice.

Testing could hold the industry to higher standards and increase protections for consumers. However, testing would also chip away at massive profit margins and make it more difficult for industries to ignore the harms these poisons cause to people and ecosystems.

Lack of Regulation

Limited regulations further compound the harm caused by inadequate testing and offer minimal protection against toxicity. Industrial agricultural companies use toxic chemicals and pesticides to increase their profit margins, creating more output for less cost. Compared to the four other largest agricultural producers across the globe, the United States is notably behind in regulating toxicants. Hundreds of millions of pounds of pesticides banned in the EU, China and Brazil — three of the largest global producers and users of pesticides — are still utilized in the United States every year.

Despite unilateral bans on harmful pesticides being the most productive way to diminish toxic exposure and reduce health harm, the United States largely relies on voluntary cancellation of pesticide use by industry actors instead of regulating their use directly. By leaving it up to the industry, corporations have the freedom to prioritize their own profit over safety.

Lack of Protection for People

Antibiotic Resistance

Historically, industrial agricultural has been deeply enmeshed with capitalist modes of production. Antibiotics have become a low-cost way to prepare animals for food, despite contributing to a public health crisis. The use of antibiotics has been credited as the pivotal technology for industrializing animal agriculture, as it creates greater amounts of food and requires far fewer laborers. To achieve this efficiency, antibiotics are used as preventative measures to compensate for crowded, unsanitary conditions that spread disease among animals.

This prioritization of growth and product output over hygiene and animal welfare has led to an unnecessarily widespread use of antibiotics and steroids in farmed animals. The process disproportionately affects low-wealth groups because antibiotic resistance leads to increased
medical costs, longer hospital stays, and higher chances of death. For those in the United States without access to comprehensive healthcare, it’s less attainable to afford more extensive treatments once standard antibiotics stop working.

**Pesticide Exposure**

Additionally, the pesticide manufacturing industries in the United States have profited off the sales of toxic pesticides for decades. In 2018, pesticide exporters in the United States made over $4 billion in pesticide production and export. Some of these exported chemicals were already banned in the United States but continued to be created for less industrialized countries that have yet to implement environmental protections against them. Such exports make a lot of money for American industries but harm other countries and the planet because they contaminate oceans and air, exposing children and adults around the globe to toxicants.

*The World Bank estimates that more than 355,000 people die every year from pesticide poisoning.*

Those most marginalized are also those most at risk from the harmful effects of agricultural pesticide use. The widespread act of covering crops with pesticides is worsened by the use of airplanes spraying land and affecting the community at large. This is especially worse for Black, Latino and low-wealth communities, whose populations are more likely to live near or work in industrial agriculture operations.

Increased toxicity in air, soil and water makes caretaking duties, such as sanitizing water and caring for those with health issues, more challenging. The burden usually falls on women to complete these duties, and exposure to EDCs from pesticides is particularly risky for pregnant people or nursing parents because of the sensitivities in their babies’ developing systems.

**Harms to Indigenous Communities and Immigrants**

Indigenous communities have noted their own high risk for EDC exposure because of their close relationship with nature and proximity to pesticide-using industrial agriculture operations, but when they raise concerns they are often ignored. Community midwives and mothers noted poor birth outcomes for many years before regulating agencies acknowledged the harm. Even when governmental groups have eventually realized the extent of harm and passed regulations to mitigate it, the chemicals had often already become pervasive.

Indigenous communities often live in areas exploited by government and corporations for profit, particularly very rural areas in the continental United States and in Alaska. Due to the makeup of some pesticides, the chemicals tend to travel northward and bioaccumulate in high quantities in the Arctic, severely damaging Arctic animals, marine mammals and Indigenous people who live there.

Industrial agriculture workers are most often immigrants and people of color who are exploited through low wages, poor working conditions, and limited legal protection. Despite doing grueling manual labor and experiencing heightened toxicant exposure, a 2018 survey found only 32% of farmworkers reported making more than $30,000 per year.
This exploitation of farmworkers is worsened by the fact that most do not have access to healthcare or workers’ compensation and are unlikely to be able to obtain care or protective gear for the health risks they’re exposed to.

As a result of agricultural production, these workers unintentionally bring toxicants home to their partners and children, as their skin and clothes become contaminated with chemicals. This exposes families to reproductive harm and creates an unsafe environment for children.

**Harms to Low-Wealth Communities**
While pesticides pollute the air, water and soil of nearby residences, they also contaminate food. Those without high risk of neighborhood exposure may still unknowingly consume toxic pesticides if they don’t have the socioeconomic privilege to access organic food. Switching from conventional to organic food lowers levels of pesticides and chemicals in diets, but this is not always possible in low-wealth communities because of the higher cost and limited availability of fresh, healthy and organic foods. A lack of produce and healthier food in those communities affects the health of families and worsens pregnancy outcomes; pregnant people and parents are unable to provide their families with the safety identified as a tenet of reproductive justice.

**Harms to Nursing People**
The effects of industrial agriculture on lactation have further exacerbated food insecurity for low-income families that may already be struggling to afford food. The environmental harms to breast milk worsen already existing racial disparities. Policies and programs that promote education, postnatal healthcare, and workplace and community support for nursing increase their rates, but Black, Indigenous and other communities of color often lack access to these resources, resulting in fewer Black and brown families breastfeeding or chestfeeding than white families.

Hospitals serving predominantly Black families are less likely to provide lactation support and more likely to offer formula. For families whose breast milk may be more difficult to produce because of toxicants from nearby industrial agriculture operations, limited lactation support is an additional barrier to nursing.
Case Study: Agricultural Toxicants and Indigenous Communities

Indigenous communities have been particularly affected by agricultural toxicants as increasing amounts of their land are colonialized by agricultural industries, contaminated with pollutants, and burdened with unsafe animal agricultural practices. The toxic runoff often flows right into their soil, water and food, exposing Indigenous people to toxicants at alarming rates.

Indigenous women, in particular, are exposed to toxicants at higher rates due to their involvement in farming, food preparation for their families, and the gathering of traditional foods and plants that have been contaminated by pesticides.

One study followed 600 Indigenous mothers and their children in Central California for 12 years to determine the effects of pesticide exposure on maternal health and future generations. The study found that 2-year-old children, whose mothers had the highest levels of exposure in their blood, showed the least mental development and had higher rates of developmental disorders. They also showed higher rates of childhood cancers like leukemia.

Indigenous women in California also expressed a loss of cultural traditions at the hands of agrochemicals, as pesticides made plants for traditional medicines less plentiful and harder to find. These Indigenous women noted that agricultural runoff harmed the opportunity to pass on their histories, stories and ceremonies to future generations, causing an unnecessary loss of tribal customs and leaving them unable to raise their children in a way authentic to their culture.

Examples of Solutions

Shift Testing Dynamics and Increase Regulation of Agriculture Products
The U.S. Environmental Protection Agency has registered more than 16,000 pesticides, and over 1 billion pounds are sold annually in the United States. But the EPA largely relies on toxicity studies conducted by the pesticide industry itself. This leads to a conflict of interest in which those most likely to profit from pesticide approval oversee the studies that determine its safety. While research should continue to be funded by pesticide manufacturers, it would be more productive for the EPA to rely on neutral researchers to determine the degree to which a pesticide causes harm.
The Center for Biological Diversity’s Pesticides Reduction campaign has filed a series of lawsuits against the EPA to investigate pesticides to protect public health. Regulation of pesticides has proven successful in other countries. Countries that banned atrazine found there are other viable ways to produce corn and grow food without using the toxicant and still keep losses at less than 1%. Germany and Italy, which both banned atrazine in 1991, have seen their corn harvests increase. To ensure safety, testing must be done on adjuvants as well as active principals, as studies show they drastically change the toxicity of a chemical.

Increased regulation is also necessary for antibiotics used in animal agriculture. The WHO has called on industrial agricultural operations to increase regulation of antibiotic use and require veterinary supervision of medicinal practices. It has also noted the importance of ceasing use of antibiotics on healthy animals for preventative measures or growth. Since preventative medications are often used to prevent disease from spreading among animals in unsanitary agricultural settings, policy requiring improved safety and hygiene for animals would diminish the need for widespread antibiotic usage. The WHO has called on policymakers and the healthcare industry to limit the causes of antibiotic overuse and address the far-reaching consequences of antibiotic resistance, including increasing access to vaccines, sex education and safe sex practices.

**Increase Access to Safe, Healthy Foods**

Access to safe, chemical-free food is important to mitigate consumption of and exposure to widespread toxic pesticides. Organic foods or antibiotic-free labels all denote food with less toxic chemicals or less harmful antibiotics. Unsurprisingly, 72% of Americans say price is a deciding factor in whether they purchase organic items. However, federal subsidies and other agricultural policies favor industrial production, keeping the cost of unhealthy, pesticide-laden foods artificially low and making organic foods more expensive and less accessible for low-income communities. Policies are needed to shift subsidies from animal agriculture and commodity crops to organic agriculture, increase incentives and support for farmers to transition to organic production, and increase access to healthy, pesticide-free food by placing more grocery stores and community gardens in low-wealth areas.

In addition to policies making organic foods more affordable and widely available, better wages and income distribution is imperative to help low-income communities afford safe and healthy food. Specifically, higher wages for agricultural workers would allow those responsible for growing the food — and those most affected by toxic agricultural chemicals — to access safe alternatives.

**Enforce Safety Guidelines in Agricultural Operations**

While safer products and techniques exist to promote agricultural growth, pesticide use has increased in the past decade, raising the risk to farmworkers and nearby communities. Several farmworker advocacy agencies, including Farmworker Justice, Farm Labor Organizing Committee, and United Farm Workers, have called for farmworker inclusion in fair labor laws, supporting farmers in reducing reliance on pesticides, increased access to safe working conditions, and diminished corruption by farm owners. Similarly, passing legislation like the HEAL for Immigrant Families Act would make it easier for immigrant families to access public healthcare or purchase health insurance through the Affordable Care Act, providing far greater access to health and safety for the many agricultural workers who are immigrants. It’s also imperative to protect workers from harmful chemicals and remove dangerous pesticides from
farming systems through policy such as The Protect America’s Children from Toxic Pesticides Act.

The Expert Group Meeting of the UN Permanent Forum on Indigenous Issues has called for several policy changes that would mitigate agricultural toxicity in Indigenous communities. These include the elimination of agrochemicals that contain EDCs, cleanup of regions contaminated by pesticide and agrochemicals, respect and understanding of Indigenous people’s environmental practices, accessible healthcare for women and children most hurt by toxicants and banning the United States from exporting harmful pesticides to other countries.

Prohibiting new CAFOs from being built and current CAFOs from expanding would drastically diminish toxic emissions from pesticides and animal waste. Until stricter regulations on CAFOs are passed through policy such as the Safe Line Speeds in COVID-19 Act, the risk of contamination among animals and inadequate safety for workers will remain.

Notes About the Scope of This Paper

This paper aims to provide a brief, introductory overview of the relationship between industrial agriculture, racial inequity, reproductive justice, and their connection to capitalism. It does not intend, nor is it able, to cover the full range of issues relevant to these complex subjects.

In the context of this paper, “capitalism” refers to market capitalist systems predicated on models of infinite growth. While the discussion of capitalism in the paper frequently references racist, sexist and classist outcomes that perpetuate reproductive injustices, it’s not the intention of this paper to collapse racism, sexism or classism into capitalism.

Gender is the behavioral, cultural or psychological traits typically associated with one sex. Gender is viewed along a continuum and includes both binary and non-binary gender identities, including LGBTQIA+. We acknowledge that all people are affected by these issues, and gender-diverse people often face additional challenges due to the lack of inclusive healthcare and other systems of oppression. Within this document we use gender-neutral terms when possible; however, since the literature to date has largely reported results in a binary way — female or male — we have retained some gendered language to accurately represent the best available research.