GA4: Environmental Committee

Student Officer: Erdinç Acar

Issue: Addressing the environmental violence regarding the excess use of pesticides

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Committee: GA4

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I. Introduction

Unrestrained pesticide use has gained prominence as an emerging environmental issue that could easily be referred to as "environmental violence." The chemicals used to counteract pests and improve agricultural produce have increasingly posed a danger to ecosystems, biodiversity, and human health. In time, dependence on these substances has grown; more powerful substances are used in quantity to cope with the growing resistance of pests and increasing demand for crops. It has resulted in soil quality deterioration, water source contamination, and risk to non-target organisms like pollinators and aquatic life. Over time, the effects accumulated, and ecological balance is jeopardized, while a serious call to action has become required for mitigating environmental violence through the overuse of pesticides.

It is worse in South America because the region depends so much on large-scale agriculture meant for global exports, mainly soybeans, coffee, and other cash crops. Large adoption of GM crops has translated into increased application of herbicides, such as glyphosate-usually in heavy amounts. These are linked to high environmental and health risks in rural communities and a loss of biodiversity in one of the most ecologically rich parts of the world. The Amazon rainforest is likewise threatened, as are other key habitats, through pesticide drift and contamination that affects not just wildlife but also the indigenous and local communities depending on them. Policymakers should start working toward policy reform to reform the excess use of pesticides in South America, while also transitioning to sustainable agricultural practices that do not threaten the unique environment and communities of that region.

II. Involved Countries and Organizations

Brazil:

Brazil is among the leading producers in the world of soybeans, sugarcane, and corn, and its agriculture relies heavily on pesticides to sustain high returns. Soybeans, to begin with, are Brazil's chief export crop; likewise, cultivation commonly involves heavy use of herbicides, including glyphosate, with

widespread adoption of GM soybean varieties. Sugarcane, primarily grown for biofuel, is in equal measure demanding in terms of care regarding pesticides. As with the environmental and health concerns that have been on the rise, the rules concerning pesticide use remain lenient in Brazil because most agricultural exports are essentially important to the economy. There is a high possibility, however, that pesticide drift will pose an enormous threat to the Amazon rainforest and generally to all sensitive ecosystems.

Argentina:

Nowadays, Argentina is a leader in the international production of soybeans and a great producer of corn and wheat. Its dominant crop is soybean, and at the same time, its largest export. Widespread adoption of GM soybeans has resulted in increased use of herbicides driven by the expansion of this crop. This gives the nation a reputation for having one of the highest consumptions of pesticides in the world. While agriculture is very important for Argentina, a strategic sector of the economy, the generalized use of pesticides has thrown up serious questions regarding public health, especially for the rural communities suffering from health problems caused by exposure. Environmental damage is increasing, and regulations have been put in place by the government that are very hard to enforce. Agribusiness holds much sway. Policies that get adopted generally support their model of production at the cost of adequate environmental and health protection.

Paraguay:

Like its neighbors, Paraguay depends highly on the production of soybean, one of its major exports, wherein soybean taps a large share of the country's agricultural output. Other crops produced, though on a small scale compared to soybean, include corn and wheat, mostly produced within large-scale monoculture plantations. While the country's expansion of soybean has promoted dependence on pesticides, the general regulatory framework and enforcement capabilities are weaker compared to leading producers like Brazil and Argentina. This has led to considerable health risks in rural areas due to frequent pesticide exposure via application and drift. While at the same time, ecological organizations are pressing hard for its reform, the steps that Paraguay makes toward sustainable practices are painfully slow, burdened by economic and infrastructural setbacks.

Uruguay:

The most important crops of Uruguay are rice, soybean, and wheat, with rice being one of the leading crops. While much smaller compared with neighboring Brazil and Argentina, agriculture in Uruguay has increased its pesticide use to maintain competitive yields, mainly in the growth of soy and rice. Some regulations have been instituted in Uruguay, but these are hardly implemented and this small country continually pays the price of high agricultural production. The interest by Uruguayan farmers in organic

farming only recently became an interest because of the increased demand by consumers for organic produce and a growing awareness of the impact that chemicals used in farming have on the environment. However, this is still quite difficult to undertake on a large scale because rice and soybean farming places such heavy reliance on pesticide use.

Bolivia:

Compared to some of its neighboring countries, the agricultural sector in Bolivia is on a relatively small scale; nonetheless, it focuses on crops like soybeans, sugarcane, and quinoa. Soybean production is a major agricultural export of Bolivia; most of the crop goes to foreign markets, and its use is extremely chemical-intensive. The relatively weak regulatory environment within the country has allowed widespread pesticide use that often results in environmental degradation in the form of soil degradation and water contamination. Because pesticide drift and runoff flow into residential areas often many kilometers away from the farms themselves, indigenous peoples and rural communities are especially vulnerable. The Bolivian government is thus little by little beginning to see more and more advocacy in favor of sustainable agricultural practices, although this too poses the daunting task of balancing economic development against environmental protection.

Colombia:

Colombia is famous for its export of coffee, bananas, and flowers. Coffee is perhaps the most iconic and economically valuable crop in the country. The industry of coffee production in this country, much like banana plantations, relies heavily on pesticides to keep quality up and infestation under control. Besides, flower farming in Colombia- another essential industry that comes with a big demand for fresh-cut flowers in the world market- brings significant contamination with active principles. In the last years, Colombia has been building up its legislation on the use of pesticides and promoting Integrated Pest Management to reduce dependency. Simultaneously, illegal crop eradication campaigns are also carried out through chemical spraying, further complicating the environmental landscape with consequences in terms of biodiversity and public health.

Chile:

Chilean agriculture is diversified, with fruits, grapes, apples, and berries supplemented by wine among the major exports, so pesticide use is common since Chilean fruit production has to meet the high standard set for international markets, especially those of Europe and North America. The intensive use of pesticides in orchards and vineyards raises environmental concerns concerning soil health and water contamination, while it also exposes agricultural workers to harmful chemicals. Compared with most countries, Chile has a relatively well-regulated pesticide framework; however, their application is often

inconsistent, especially in remote areas. Organic and sustainable agriculture has been growing in recent times in Chile, supported by governmental actions and consumers. Yet, scalability in the farming sector still faces challenges ahead.

China:

China holds the title of the world's largest pesticide producer and exporter, owning a high proportion of the global market for herbicides, insecticides, and fungicides. Production in China is growing rapidly; some of this heavy production aims to meet high demand at home, with the rest set aside for export, especially to countries with intensive agriculture. Domestically, China applies pesticides in substantial amounts to staple crops like rice, wheat, and vegetables to feed its large population. The excessive use and improper application of pesticides have widely polluted the soil and water, causing loss of biodiversity, and serious health risks, mainly in countryside villages. More recently, China has introduced regulations that reduce pesticide application and encourage IPM adoption; its enforcement is hard due to the vast agricultural territory and the big agrochemical industry inside its borders.

The United States of America:

The United States is also one of the biggest exporters and consumers of pesticides. Huge areas of the intensive agricultural industry of the U.S. rely upon pesticides for manufacturing enormous quantities of crops such as corn, soybeans, cotton, and wheat. The responsibility of the regulatory framework lies with the Environmental Protection Agency, which tries to regulate pesticide use along with its environmental consequences. Regulations, however, are often politically and industrially resisted, especially when it comes to herbicides associated with GM crops. In the U.S., there has been more public outcry about pesticide residues in food and water sources, resulting in increased organic farming and stricter state-level regulation, as is the case in California. Although some steps have been taken to progress towards sustainable practices, the U.S. happens to be one of the major participants in the world pesticide market. Its practices and policies shape agricultural approaches across the globe.

III. Focused Overview of the Issue

1. Understanding the Use of Pesticides

The mid-20th century saw the upsurge of pesticides in agriculture, therefore, offering solutions to prevent losses by these photocontrolled organisms. Synthetic chemicals like DDT were rapidly adopted upon introduction, but soon unforeseen consequences emerged in the form of ecosystem pollution,

impinging on human and animal health. In this context, pesticide usage is indeed very complex, and there is an emerging need for modern, safer alternatives.

Pesticides can also be classified by target organism: insecticides combat insects, herbicides fight weeds, and fungicides prevent fungal diseases. Each one of these types plays a very crucial role in maximizing crop yields and protecting against pests, but they differ in toxicity and persistence in the environment. Being conscious of these differences is very important to be able to evaluate environmental impact and select appropriate alternatives.

Farmers find pesticides effective because they are inexpensive, easy to apply, and can reduce losses from these living organisms, thus improving yields. Ironically, this very effectiveness often proves to be a vicious circle because increased application may bring about pest resistance that demands application in even higher dosages. The current trend indicates that integrated solutions will have to be devised for both immediate and long-term agricultural sustainability.

2. Environmental Impacts of Pesticide Overuse

Pesticides affect the chemistry of the soil by reducing its essential nutrient elements, killing beneficial organisms, and affecting the structure of the soil. The persistence of some of these chemicals in the environment may be cumulative in the soil and thus contribute to its infertility and long-term degradation. Soil degradation not only reduces crop productivity but also impairs natural resilience to erosion and further depletion.

This predominantly occurs via runoff or leaching of pesticides, which eventually contaminate water bodies from rivers and lakes to groundwater. In addition, such chemicals could be harmful to aquatic organisms, changing the lives of fish, plants, and other organisms that constitute the base of an aquatic ecosystem. If it enters human consumption, drinking water with contaminated supplies may also have serious health effects; therefore, better water management and monitoring need consideration.

Some pesticides volatilize into the air and become part of pesticide drift. This can contaminate adjacent properties and add to air pollution, which may have implications for respiratory health in both humans and animals. Pesticides that are airborne may be transported for long distances, which makes them a threat to ecosystems well beyond the area where the application was made, as they point out the omnipresence of pesticide pollution.

3. Human Health Risks Associated with Pesticides

Because farmers and agricultural workers are constantly near treated crops and fields, they are highly exposed to these chemicals. The symptoms include nausea, respiratory problems, and skin irritations

due to acute poisoning, while the chronic toxic effects lead to diseases like cancers and neurological disorders. Along with the more stringent regulations, proper protective gear, and training, this will secure the safety of the workers themselves.

The communities near agricultural fields are indirectly exposed through contaminated water, air, and soil. Chronic exposure can lead to health effects, which include developmental problems in children and issues with the reproductive health of adults. It requires a community-based approach, whereby policies have to focus both on the risk of direct and indirect exposure.

4. Economic and Social Consequences of Pesticide Dependency

While pesticides may cut costs in the short term, long-term costs associated with soil degradation, pest resistance, and health care mount. Farmers often bear increased production costs through the use of ever-stronger chemicals, while communities bear the indirect economic costs of health care and cleaning up after environmental damage.

The overuse of pesticides undermines biodiversity and ecosystem services, important components of resilient food systems, thereby undermining food security. For instance, the decline in pollinators threatens the yields of many crops, just like soil degradation reduces productivity. With this in mind, finding a balance between pest control with environmental care is paramount to food security.

5. Pesticide Usage in South America

South America is a broad exporter of many agricultural products, ranging from soybeans to coffee and corn. In this respect, the aggressive expansion of monoculture crops throughout the region has seen heavy pesticide use in many cases, which surpasses levels seen in any other region of the world. This heavy reliance speaks not only to the economic burdens that global markets have placed but also to the agricultural policy of each respective country within South America.

Pesticides like glyphosate, liberally used on GM crops, dominate the agricultural landscape of South America. Glyphosate and other chemicals are used so widely that they have contaminated the soil and water enough to harm even the native flora and fauna, including the health of people living around them.

Pesticide exposure in South American rural communities results from spraying, spray drift, and contamination of water supplies. Respiratory problems, skin irritation, and chronic diseases such as cancer and reproductive disorders are just some aspects of the associated chemical risk. The identified risks require regulatory reforms along with community-oriented interventions.

The Amazon is in South America and comprises part of the richest biodiversity on Earth. Pesticide drift and contamination have turned out to be a great threat to life on Earth, considering their great effects

on biodiversity through harming the lives of various species including those that pollinate, aquatic species, and mammals.The loss of biodiversity interferes with the right to life of indigenous and local people with whom such ecosystems are closely linked.

In South America, regulation is done at the national level, and each has relatively tight legislation concerning pesticide use, though there are others with more lenient policies. Some of the challenges facing such situations include very poor enforcement, political influence from agribusinesses, and resource scarcity in monitoring pesticide application.

Organic farming, agroforestry, and integrated pest management are some of the eco-friendly practices that various organizations are promoting, along with governments. Some countries like Brazil and Argentina are making attempts to discover eco-friendly policies that balance agricultural productivity with environmental protection. These regional initiatives and international partnerships help these countries in their task.

IV. Key Vocabulary

Pesticide: This is a general term describing chemical or biological agents used with the intent of killing pests or preventing any form of damage from the aforementioned pests. The most common kinds of pesticides include insecticides, herbicides, fungicides, and rodenticides among other agents applied to crops, structures, and even public health to protect those from pests.

Highly Hazardous Pesticides (HHPs): These are pesticides that are acknowledged to present particularly high levels of acute or chronic hazards to health or the environment according to internationally accepted classification systems such as the World Health Organization (WHO) or the Global Harmonized System (GHS).

Persistent Organic Pollutants (POPs): These are toxic chemicals that resist degradation, persist in the environment, bioaccumulate in organisms, and biomagnify up the food chain. Examples of POPs include some pesticides like Dichlorodiphenyltrichloroethane (DDT). POPs occur in such quantities as to be, or potentially be, injurious to health at extremely low concentrations.

Integrated Pest Management (IPM): An ecologically judicious use of all available techniques such as biological, cultural, and physical controls along with chemical controls as part of an Integrated Pest Management program to minimize the use of pesticides. The IPM manages pest populations at levels that do not impair the intended use of the land in a manner that minimizes risk to people, property, and the environment.

Genetically Modified (GM) Crops: These are crops that are genetically modified to possess the desired characteristics, usually withholding some certain pests or resistant to specific herbicides. These GM crops require specific pesticides, hence increasing their intensity of chemical use and furthering environmental damage.

Bioaccumulation: This term refers to the increase in the concentration of a chemical in a biological organism over time, compared to the chemical's concentration in the environment. Compounds accumulate in living things any time they are taken up and stored faster than they are metabolized or excreted.

Pollinator Decline: Because of pesticide exposure, among other factors, the populations of the species that provide pollination are reduced. Bees and butterflies are examples of these. The decline in the populations of pollinators not only threatens biodiversity but also agriculture, as many crops depend on these insects for their reproduction.

Endocrine Disruptors: These are chemicals that interfere with the endocrine system, which functions to maintain proper balances of hormones in animals and humans. Some pesticides are known endocrine disruptors and may cause reproductive developmental, and immune system problems.

Agrochemicals: Agrochemicals are mainly applied in agriculture in the form of pesticides and fertilizers to support the growth and protection of crops from pests. While very effective in improving yield, poor or excessive usage of agrochemicals leads to environmental and health concerns.

Sustainable Agriculture: The term "Sustainable Agriculture" refers to the farming methods that meet human food needs of the present without compromising the ability of the environment to provide for future generations: sustainable agriculture involves practices such as limiting the use of chemicals, maintaining good quality of the soil, and preserving biodiversity.

Non-target Species: Those that are not in the line of application of pesticides, yet they receive the unintended outcome of the application. Good examples include pollinators and aquatic life amongst other useful organisms found within the ecosystem.

Herbicide-Resistant Crops: These are crops that are modified for resistance to a particular herbicide result in the establishment of heavy application of the specific herbicide without harm to the crops. This sometimes leads to over-application of the herbicide, which eventually hits non-target organisms and most often leads to the build-up of herbicide-resistant weeds.

Biological Control Agents: These are the natural predators, parasites, or pathogens that have conventionally been used as one of the means of regulating the population of pests, with minimum application of chemical

pesticides. Biological control is a part of Integrated Pest Management and contributes to ecological harmony.

V. Important Events & Chronology

Date (Day/Month/Year)	Event
1940s	During the Second World War, synthetic pesticides like DDT were developed and became widely used in agriculture post-war.
1962	Rachel Carson published a book named “Silent Spring” which exposed the dangers of using pesticides on ecosystems and sparked public awareness and environmental activism.
1971	UNESCO’s Man and the Biosphere program started. This program promoted sustainable use of natural resources and conservation and indirectly addressed pesticide impacts.
1972	The UN Conference on the Human Environment in Stockholm was held. This was the UN's first major conference on environmental issues which highlighted the environmental impact of chemical pollution, including pesticides
1972	Following environmental and public health concerns raised by Silent Spring and subsequent research, the U.S. banned DDT
22 March 1985	The Vienna Convention for the Protection of the Ozone Layer was held.
1985	FAO International Code of Conduct on Pesticide Management was created to guide countries in responsible pesticide use.
22 March 1989	Basel Convention on Hazardous Wastes was held. It addressed the international movement of hazardous wastes, including pesticide residues.
5 June 1992	Convention on Biological Diversity was held. It was a major international agreement aimed at protecting biodiversity and

	indirectly addressing pesticide use by promoting sustainable practices.
10 September 1998	The Rotterdam Convention was held. It established protocols for the international trade of hazardous chemicals, including pesticides, requiring exporters to obtain informed consent from importing countries.
22 May 2001	Stockholm Convention on Persistent Organic Pollutants targeted the elimination of harmful POPs, including several pesticides, due to their persistence, bioaccumulation, and toxicity, influencing global pesticide regulations.
26 August 2002	World Summit On Sustainable Development (WSSD) was held and it emphasized the need to manage chemicals sustainably.
2003	The Glyphosate-resistant (GM) crops were introduced which led to a significant increase in glyphosate use.
2012	The idea of creating Sustainable Development Goals at the UN Conference on Sustainable Development in Rio de Janeiro was created.
2014	Due to declining pollinator populations linked to pesticides, countries formed task forces to address the impact of pesticides on pollinators, focusing on reducing exposure and protecting biodiversity.
September 2015	The UN Sustainable Goals were established. The SDGs included goals related to chemical management, such as reducing pesticide pollution and promoting sustainable agriculture, to achieve global environmental and health objectives.
23 September 2021	The UN Food Systems Summit was held and it highlighted the need for sustainable agriculture to ensure global food security. It also focused on reducing pesticide dependency.

VI. Past Resolutions and Treaties

- Stockholm Declaration on the Human Environment (1972): This convention marked and highlighted awareness regarding pollution and pesticide impact. The United Nations Conference on the Human Environment gave birth to the UN Environment Programme and called for countries to set up policies that would protect the environment. It formed the backbone for many future treaties.
- Vienna Convention for the Protection of the Ozone Layer (1985): This convention used the framework for international cooperation on ozone-depleting substances, and it provided precedence for the regulation of harmful chemicals. Considering that the pesticides form compounds that destroy ozone, indirectly it was being addressed. As it did not need a reduction, it set up world cooperation about chemical impacts and resulted in the Montreal Protocol which influenced the methyl bromide restrictions.
- Montreal Protocol on Substances that Deplete the Ozone Layer (1987): This treaty is considered one of the most effective environmental treaties so far, which has been enacted to reduce the use of ozone-depleting chemicals, a pesticide methyl bromide. The binding targets contributed so much to the recovery of the ozone layer and showed good international collaboration.
- Basel Convention on Hazardous Wastes (1989): The Basel Convention made two initiatives on hazardous wastes, of which pesticide residues are a part, by regulating its transboundary movement. For example, it imposed an obligation on countries exporting waste to guarantee safe hazardous waste disposal to minimize environmental damage in the form of illegal dumping and vulnerable regions.
- Convention on Biological Diversity (CBD) (1992): While CBD aimed more at the conservation of biodiversity and sustainable agriculture, measures involving integrated pest management indirectly aimed to reduce the overuse of pesticides. This has indeed inspired national policies in support of alternatives to chemical-intensive farming with a focus on ecological balance.
- Rotterdam Convention on Hazardous Chemicals and Pesticides (1998): This laid down the procedure for countries to make informed decisions on importing hazardous pesticides, thus advancing the openness of safety in the international chemical trade. This gave the right to countries to regulate the importation of harmful pesticides, reducing uninformed or unsafe uses.
- FAO International Code of Conduct on Pesticide Management (2004, updated in 2014): The code of FAO established standards, though nonbinding, on safety, risk reduction, and integrated pest management. While voluntary, it became widely adopted as a standard that allowed countries to establish much safer pesticide usage practices and reduce the risks to health and the environment.
- UN Sustainable Development Goals (2015): The SDGs have goals related to the reduction in the use of chemicals and the protection of biodiversity to encourage sustainable agriculture. Objectives such

as 12 on Responsible Consumption and 15 on Life on Land have motivated countries to adopt policies that are concentrated on reduction in the use of pesticides and ecosystem protection.

VII. Failed Solution Attempts

- Initial FAO Code of Conduct on the Distribution and Use of Pesticides: Although the original FAO Code prescribed codes of conduct on the usage of pesticides voluntarily, because it had no binding enforcement power, it had a negligible positive contribution to the practice of applying pesticides in most parts of the world. Most countries did not fully adopt or establish the code; hence, many of the problems concerning the over-application of pesticides and unsafe handling of the substance persisted.
- World Summit on Sustainable Development (Johannesburg) (2002): Against the background of the very high level of rhetoric on sustainable development, the commitments coming out of this summit were essentially voluntary, and there were no binding agreements on reduction in the use of pesticides. Implementation of the proposed changes was hard for most countries due to either lack of resources or political will to do so. Thus, any real measurable impact on pesticide use was minimal.
- UNEA Resolution ¾ (on Environment and Health) (2017): The United Nations Environment Assembly passed a resolution regarding the impact of environmental and health effects of toxic chemicals, among them pesticides. However, the resolution contained no binding measures, so little has changed from it. It increased the awareness but brought about very few important policy shifts and decreases in pesticide use.
- Strategic Approach to International Chemicals Management (SAICM) Targets for Chemical Management by 2020 (2020): SAICM aimed at reaching, until the year 2020, the ideal situation of safe chemical management all over the world, to which the reduction of pesticide risks would be taken into account. Unfortunately, most of the goals could not be met because of funding shortages, lack of global coordination, and inadequate support in developing countries where pesticide misuse continued.

VIII. Possible Solutions

The Use of Integrated Pest Management (IPM): Integrated Pest Management, or IPM, incorporates methods of biological, cultural, and mechanical control to manage pest populations while maintaining

minimal reliance on chemical methods. With its emphasis on monitoring and preventive approaches, the balance of IPM reduces pesticide use and maintains ecological balance.

The Use of Natural Predators: Biological control involves the use of natural predators and pathogens against pests. It reduces the application of chemical pesticides, hence playing a dual role in crop health and biodiversity. The application of biological controls requires ecological knowledge and is effective only under highly controlled conditions.

Organic Farming Practices: Organic farming excludes the application of synthetic pesticides, based on natural methods for their control. This will increase biodiversity and soil health, which forms a resilient ecosystem that relies less on chemical inputs. Of course, for all these changes to happen, education, support, and market incentives are also needed for its wide proliferation.

Technological Innovations in Sustainable Agriculture: With the technology that's constantly being advanced, accompanying farmers means that they can be so much more precise in the placement of pesticides by using precision agriculture with data-driven pest management. Other new methodologies concerning monitoring and control of pests, through means of drones, sensors, and AI, extend a promising frontier in sustainable agriculture.

Community Awareness and Education Methods: Educate the community about the health and environmental impacts of pesticides. This empowers a well-informed citizenry. Awareness can lead to consumer demands for products grown with sustainable practices that create market demand for environmentally friendly practices.

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