
EFFECTS OF CHEMICAL FERTILIZER PESTICIDES ON HUMAN HEALTH

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ABSTRACT

A marketable surplus of agriculture is the key factor affecting the economic growth of a developing country like India. The Green Revolution arose in response to the insufficient supply of agricultural goods and the need to feed an ever-increasing population. Green by producing more food, developing nations were able to overcome ongoing food scarcity. More meals and other farm products can be produced by using high-yielding seed varieties and changing farm practices. Chemical fertilizers are being used at a much higher rate. For the most effective production of Chemical fertilizers and pesticides are used in agriculture to increase yield and feed a growing population has become essential. Agriculture practices like these allowed for the growth and sustainability of food grains. However, they have a large effect on the environment and people's health. This article contains useful information. A sketch of the health and environmental effects of chemical fertilizers and pesticides.

KEYWORDS: *Agriculture, Chemical Fertilizers, Human Health, Eco Friendly, Pesticides.*

1. INTRODUCTION

Pollution and soil contamination are two significant problems in today's society. More than 300 million pounds of various chemical poisons are currently manufactured under various brand names as fertilizers and insecticides. Excessive usage of synthetic fertilizers and pesticides has wreaked havoc on the environment while also having an indirect impact on the human population. Continued usage causes the insect to develop resistance, making it harder to manage using other methods. Synthetic chemical fertilizer causes incomplete protein synthesis in leaves, resulting in inferior harvests and, as a result, pathological diseases in people and animals given such inadequate diet.

Pesticides and fertilizers are intentionally placed in the environment to serve particular positive functions, unlike most industrial chemicals. This poses a threat to the environment and human health. Despite numerous published scientific research, there are data gaps and a lack of integrated information regarding the negative effects of pesticides and fertilizers on a worldwide scale.

Fertilizers are chemicals that are used to enrich the soil with nutrients in order to improve soil fertility and plant development. Fertilizer is now a necessary component of contemporary agriculture in order to feed the world's increasing population. The use of fertilizers, particularly chemical fertilizers, has been a boon to mankind, helping to keep hunger and mortality at bay in many parts of the globe. Chemical fertilizers enhance agricultural output, but their excessive usage has hardened the soil, reduced fertility, strengthened insecticides, contaminated air and water, and

produced greenhouse gases, posing health and environmental risks. Chemical fertilizers have previously been shown to pose significant threats to balanced and long-term growth. As a result, experts and researchers are seen advocating in favor of organic fertilizers as the greatest option to prevent soil contamination and other environmental and health risks created by the misuse of chemical fertilizers.

When fertilizers are used on farmland, they are passed on to corn and vegetables, affecting human health directly or indirectly. Furthermore, because pesticides are sprayed on vegetables, they are ingested directly by humans and livestock. Excessive fertilizer use can cause nitrate contamination of underground water, which is extremely dangerous to humans and livestock[1]–[3].

Blood hemoglobin can be immobilized by nitrate concentrated water. Because organophosphate pesticides are less persistent and damaging to the environment than organochlorine pesticides, their usage has risen. However, they are linked to acute health issues like abdominal pain, dizziness, headaches, nausea, vomiting, and skin and eye issues. Several studies have attempted to prove a link between cancer and pesticides. Organophosphate pesticides are deposited in the human body over time and have been linked to cancer. In terms of food grains, the Green Revolution made India self-sufficient, but the excessive use of chemical fertilizers and pesticides polluted our diet and environment. Punjab, the Indian Republic's agricultural state regarded as the country's grain bowl, is experiencing severe difficulties.

Pesticide residues in food and bovine milk, as well as a rising cancer incidence among farmers, are all contributing to nutrient imbalances in the soil and surface water pollution.

1.2 Exposure to Agrochemicals and Poisoning:

Poorly maintained or completely unsuitable spraying equipment, and insufficient storage procedures are all examples of application strategies. Furthermore, many studies have demonstrated that poor product labelling and a lack of knowledge among consumers have resulted in widespread abuse and misuse of hazardous pesticides. Despite the lack of monitoring health data on pesticide impacts in Bangladesh, estimates indicate a yearly prevalence of organophosphate poisoning[4]–[6].

2. DISCUSSION

Population expansion, food security, health hazards from chemical pesticides, pesticide tolerance, environmental degradation, and climate change are all issues that must be addressed in today's agriculture. Some innovative agricultural and food production ideas have emerged in recent years. Climate-smart farming is a concept that explores answers in the new environment of climate change. Another significant continuing debate is between proponents and opponents of genetically modified pesticide-resistant plants, who disagree not only about their safety but also about their effect on pesticide usage. Farmers never use safety masks, gloves, or other protective equipment when spraying pesticides, allowing pesticides to enter the bloodstream through inhalation and dermal exposure, causing serious damage to their eyes, skin, and respiratory system.

The study looked at the relationship between the amount of pesticide used and the symptoms and signs of illnesses caused by pesticide exposure among spray farmers in Bhopal, Madhya Pradesh, India, who sprayed pesticides on their own and were thus directly exposed to pesticides. Burning/stinging eyes (18.42 percent), blurred vision (23.68 percent), skin redness/itching (50 percent), excessive sweating/shortness of breath (34.2 percent), dry sore throat (21.05 percent), and nose burning were the most common acute signs and symptoms reported by spray farmers after 18 months of exposure (28.9 percent). Among the sprayers, the symptoms and signs were found to be time-dependent[7]–[9].

Furthermore, real-life chronic exposure to pesticide mixtures with potential additive or synergistic effects need further investigation. The problem's true complexity is shown by the underlying

scientific ambiguity, the exposure of susceptible populations, and the fact that there are many potential mixes. A mixture of chemicals with likely carcinogenic or endocrine-disrupting properties may result in unidentified negative health consequences. As a result, determining "acceptable" levels of pesticide exposure may underestimate the true health consequences by neglecting persistent exposure to numerous chemical compounds.

When considering the health and environmental consequences of chemical pesticides, it is obvious that a new agricultural paradigm is required. This new idea must be based on a significant decrease in the use of chemical pesticides, and it has the potential to improve human health, the environment, and the economy.

Agrochemical residues that infiltrate the nutrition are a significant source of worry nowadays. The table depicts food consumption of pesticide residues in mg/day/person in different nations. Pesticides are consumed by Indians forty times more than pesticides are consumed by the typical American. Excessive usage of chemical fertilizers pollutes the environment both during production and application. When water soluble nitrogen fertilizers are given to the soil, a large part of the additional nutrients is lost to the ground water via leaching or runoff, rather than being accessible to the plants. Excess nitrate leached into rivers or ponds promotes the development of organisms, resulting in a large amount of organic waste being generated, which when decomposed produces a foul odour, which is harmful to human health. Chemical fertilizer-grown foods have been linked to a variety of health problems in both animals and humans. Pesticide and herbicide residues have an impact on the central nervous system, respiratory system, and gastro intestinal system of humans.

When significant quantities of pesticides are breathed, they may induce wheezing and nausea by irritating the lungs. The Chemical residues have also been linked to melancholy, sleeplessness, oral acetomatism, myoclonus, and hyperreflexia in humans. Excess nitrogen in plants produces methemoglobinemia, a condition that affects children. Human cancer is caused by amines generated by nitrogenous fertilizers. High amounts of aluminum cause birth abnormalities, asthma, Alzheimer, and bone disorders. Calcium poisoning causes developmental and neurological toxicity, as well as growth retardation, cognitive delay, and harm to the kidneys, nervous system, and immune system. Only high amounts of cobalt cause lung injury. Boron causes decreased sperm count, as well as discomfort of the nose, throat, and eyes. We think that creating pesticide-free zones by enacting a complete ban at the municipal level and in urban green areas is a simple task. Furthermore, under new agricultural policies aimed at sustainable development and consumer health protection, alternative methods to the present model of agricultural production should be implemented. Despite the challenges of developing a new idea, a shift to a new, cleaner, and safer agricultural model is required[10]–[12].

3. CONCLUSION

It may be inferred that farmers do not take adequate safety measures while applying pesticides, and that huge quantities of pesticides are applied improperly by these farmers, resulting in a variety of human health problems and contaminating our air, land, and water. Pesticides are extensively employed in agricultural fields to enhance output by protecting crops from possible threats, since a large percentage of the population depends on agriculture for sustenance. Adequate measures must be made to protect human life and the environment from the harmful effects of pesticides. Her is now widely accepted that the most important thing we can do for our mother earth is to nurture it by adopting an organic agricultural method. Organic farming, an ecologically beneficial agricultural method that eventually leads to good human health, is one solution to this calamity. Returning to our forefathers' path by practicing organic agriculture is a step toward long-term sustainability. Organic agriculture is a comprehensive production and management system that benefits the environment, human health, and long-term viability. Despite the fact that the

Indian government has been making significant efforts, the tiny quantities of pesticides that stay in the food supply will have no immediate effect, but if eaten regularly over time, they may create health issues. Bio fertilizers, an ecologically friendly fertilizer that is utilized in many nations, are one solution. As a result, there is a pressing need to adapt this technology to the farmer's field and into a business by mass-producing fertilizers.

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