

Pesticides: Impact of Pesticides on Human, Agriculture and Ecosystem

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Abstract

Pesticides are the substances used to kill or inhibit the growth of unwanted substances other than the required crops and in this way, they enhance the yield of the crop. They can be synthetic, semisynthetic or natural in origin. As they don't discriminate in inhibiting the growth of useful, required and friendly insects and plants, they cause a lot of harm to the environment, particularly soil, livestock's including human. Due to its ill effects, many pesticides which were used heavily in the past now fall in the category of banned pesticides. In this short article an attempt has been made to study the uses of pesticides, and their effect on human, agriculture and ecosystem. The article is concluded with the inference that many pesticides are highly carcinogenic to humans and must be recognized in banned category and other alternatives must be developed to save the health of human, livestock and environment.

Introduction

According to World Health Organization (WHO) pesticide is a chemical compound or substances which came into existence in demand to inhibit or kill the pests like, unwanted plants (weeds) insects, rodents and fungi [1]. Pesticide most widely required in world to terminate pest but its not only killing pesticide but also affects human, agriculture and environment due to its toxicity nature it is banned in developed countries.

Over 70% of pesticide are used in developed countries [2]. Clustering of pesticides mainly done as per the agent they inhibit or kill i.e. Insecticide, rodenticide, Fungicide, herbicide bactericide and according to chemical nature as; organophosphate, pyrethroid, organochlorine, carbamate, sulfonylurea herbicide, DDT (Dichloro-diphenyl) etc.

Some common pesticide and their main characteristics are as follows:

DDT- it is Insecticide colorless, crystalline, tasteless and odorless organochlorine. It is highly hydrophobic. In 1950-1980, DDT used in agriculture, but after observing toxic effects it was banned in 36 countries including India also. It directly damages nervous system and respiratory system.

2,4-D Dichlorophenoxyacetic acid – It is an herbicide. Systemic herbicide used to control weed but not grass or crop. It absorbs through the leaves.

Hexachlorobenzene-it is a fungicide. It helps in seed treatment. Hexachlorobenzene are crystalline solid and soluble in water. They effect and cause carcinogenic and thyroid cancer.

The major contribution of pesticide is to save the agro-economic, by enhancing yield which is done by controlling the growth of weeds and other insects. By protection crop and insects and other pests. Not only these pesticides act against the pests of agriculture but they are effective against disease causing agents of livestock as well as humans.

The ill assets of pesticide can be summarized as; pesticides are very toxic for human being because it can lead to cancer, gene mutation etc., as pesticides increasing, biodiversity are decreasing day by day because of toxic chemical used in it, pesticides can harm us by short term and long term diseases, pesticide became the cause of environmental pollution (air, soil water) directly or indirectly like biomagnification and eutrophication, and not only human but it effect agriculture and ecosystem of world.

In the present research article, the objectives which are tried to address includes, study of pesticide pattern crop wise to bioremediate, isolate, screen and suitable culture development as per the instant demand, to check the overall performance of cultures developed in the lab and their feasibility in field conditions, the evaluation of the modifications made to the soil and the situation of water in during induced processes, what kind of enzymatic changes have been initiated as result of bioremediation and how most effective and ecofriendly remedies can be introduced to check the contamination of soil by the excessive use of pesticides.

Review of literature:

Marine Titlie, et.al [3]. described about symptomatology of detrimental effect of pesticides. Pesticide can be acute and chronic. The primary target of this of pesticide were cardiovascular system, the reproductive system

and the nervous system different pesticide with toxicity effect on human health. This can also result in gene mutation and chromosomal aberration in exposed individuals' effect of this can be short term (I.e. headache etc.) and long term (I.e. cancer). Symptom that can show that this is due to pesticide are headache, nausea, vomiting, mental confusion etc.

Wasim Aktar, et.al [4] worked over the impact of pesticide use in agriculture. Pesticide is one of the most toxicity and widely used in world as well as in India commonly used pesticide are organophosphate and organochlorine. As there are different types of pesticide in India insecticide are affecting most on food and human health. So, they collected data that farmer used in india and world then compared how they are impacted on agriculture field, contaminate air, soil and non-target vegetation.

Henrik Andersson, et.al [5] found different factors that affect human health to pesticide and also role of benefit cost analyses. Three kind of study on the exposure of people can be distinguished as (a) directly exposed peoples e.g(Diabetes). (b) indirectly exposed peoples (c) consumer so, pesticide was the most toxic chemical present on earth and can cause many diseases that can led to death of person (eg cancer). What kind of risks are associated and how the required cost can be reduced or analyzed or measured is discussed in this article? Further interdisciplinary approach can be adopted to reduce the stress on a single are that is also suggested.

Ravindran Jayaraj, et.al [6] discussed the effects of organochlorine pesticide. Throughout the world this pesticide being used effectively. They belong to the group of chlorinated hydrocarbon derivative. There is different organochlorine which effect organism and their biochemical nature. High toxicity, bioaccumulation and sluggish decay are main attributes of this pesticide. Due to this reason this is banned in developed countries for its toxic effect on human as well as on environment. This review was based on the Idea to enlist the organochlorine-based pesticide to understand their mechanism and to find an ecofriendly substitute of this compound.

Ankit Sharma, et.al [7] studied the worldwide pesticide and their impact on ecosystem. Used od pesticides in agri sector is immense as the goal of enhanced yield per hector can be effectively achieved through this.

They also ensure the food security of global. Worldwide survey was done i.e. Asian, Africa, Australia, Europe,

America approximately two million tons of pesticide were analyzed where China has secured the first position after that it is USA followed by Argentina where it swelling quickly pesticide unsurely benefit crop but this hazard is more than benefit. Total ecology including air, water and soil is contaminated by pesticidal compounds directly or indirectly.

Analysis

As it is a brief review and only few literature reports are taken into consideration, but still while going through these reports and on comparison it has been analyzed that pesticides are impacting day by day to their source. Pesticides are not only impacting our agriculture but also to human health and ecosystem. Pesticides are directly or indirectly polluted air water and soil.

As in one of the review worldwide survey also occur there also pesticides effect were taken and in developed countries this is banned due to its toxicity. During to analysis found that pesticides can cause gene mutation, cancer and chromosomal aberration.

Conclusions

Pesticide is a chemical compound kill pest including insect, rodent, fungi etc. It is very toxic to human, agriculture and environment that is why banned in developed countries. They affect our nervous system, reproductive system and cardiovascular system. There are many pesticides in India other than organochlorine. There toxicity can lead to gene mutation, cancer chromosomal aberration etc. Not only to human but it also harmful toxic for agriculture and farmer. Pesticide directly or indirectly polluted air, water, soil and food.

Reference

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