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# Pesticide pollution and it's effect on the environment RGDS

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**Abstract**
This paper includes the ever increasing pressure to increase the food production to meet current demand for protection of crops from pests. Pesticide include chemicals to protect crops from insects (Insecticide), weeds (herbicide) disease causing micro-organism (fungicide and bactericide) chlorine is the basis for many of the most toxic and persistent synthetic chemicals known.

## Introduction

The ever increasing pressure to increase food production to meet current demand requires protection of crops from pests [1]. The use of pesticides is, therefore, inevitable, and constitutes an integral part of modern crop management practices. It has been estimated that crop damage is as high as 20% where pesticides are not used. At present, food production in India is about190million tones, which is just enough to meet domestic requirements. By the year 2000 it was increased to one billion. It will require 210 million tons of food grains. The increase in production will mainly depend on introduction of high yielding crop varieties and increasing the productivity of agricultural land. Reduction of crop losses caused by posts and diseases will this be an important factor in achieving this goal and this goal can be achieved by making use of pesticides [2].

## Explanation

Pesticides include chemicals to protect crops from insects (insecticide), weeds (herbicide), disease causing microorganism (fungicides and bactericides), mites (Acaroids), nematodes (nematicides), and rodents (rodenticides). Pesticides also include chemicals that control pests directly hazardous to animals and humans, particularly vectors-such as mosquitoes, files, fleas, ticks and lice that transmit disease.

Chlorine is the basis for many of the most toxic and persistent synthetic chemicals known [3]. It tends to combine with hydrocarbons to form organ chlorines, which as a group tend to be toxic, persistent and bio accumulative, Examples of organ chlorines, are dioxins, DDT, 2,4,5,-T, PCBs and ozone depleting CFCs. Their effects on humans include cancer, reproductive and development impairment, effect on liver and kidney functions, neurological impairment and a number of other health problems. In general waste water treatment does not detoxify or destroy organ chlorines: rather they bind to particles and either travel to the final disposal area or volatilize to the air (from where they are ultimately redeposited on the ground or in water) [4].

In US, chlorine is the second most commonly released hazardous chemical (The first is ammonia) and the chloralkali industry is considered one of the most hazardous of all industries, with a high incidence of accidents and worker injury and death. India is one of the world's few producers of DDT, which the US had banned in 1972 for environmental reasons. Endosupphan and parquet, two highly controversial pesticides, which have been banned in many industrialized and developing countries for human health reasons, are produced in India at Ankles war [5, 6].

The pesticides can generally be divided as organ chlorine compounds, organ phosphorus compounds, organ carbonates and miscellaneous compounds. It is estimated that more than 1000 chemicals are available for being used as pesticides [7, 8, 9].

Organochlorine compounds are designated as chlorinated hydrocarbons. They are persistent chemical poisons and can also be called as ecopoisons, because of their bioamlification property [10]. Examples are: aldrin, dieldrin, endrine, dichloro dipheny trichloroethane (DDT), and benzene hexaachloride (BHC). Organochlorine compounds used as pesticides are the most dangerous because they are non- biodegradable and are soluble in fats and oils only. When consumed by human body, they try to reduce the quantity of fat and as a result give rise to various diseases of stomach, kidney, heart etc.

Organophosphorus are the compounds containing phosphorus. Examples are ethin, para-thion, Malathion, fenthion etc. these pesticides damage nervous system. They are more biodegradable than than organic choloropesticides. Organocar-bonates are the inorganic compounds such as toxaphene, propoxar, carbofural etc. These pesticides are the most biodegradable. Some other common pesticides are captan, amitol, diwron, molipan, diquat etc.

In India, chlorinated hydrocarbon plants are not banned, although DDT and other pesticides which involve chlorine are banned for agriculture use, simply because organ chorines as a group tend to be toxic, persistent and bio-accumulative.

Chlorine bleaching involves generation and disposal of toxic organ chlorine chemicals, including dioxin. Many extremely hazardous chemicals like phosphamidon, Dichlorvos (DDV) and parquet can also be generated. Endosulphan and DDV are listed as highly hazardous substances, because these chemicals have the potential for long range transport and entrance into the food chain. According to studies, endoslphan is the number one cause of pesticide poisoning affecting the immune system. DDV is a chlorinated organ phosphorus compounds, associated with brain cancer and leukemia in children and adult males [11].

In India, 143 pesticides are registered, with an annual consumption of about 85,000 tones, Organic-chlorine insecticides from the bulk of pesticides used in India, of which HCH, dichlorodiphenyl trichloroethane (DDT), malathion methyl parathion, monocrotophos and endosulphan are the most extensively used. Pesticides are currently used on 25% of the total cultivated area [12].

Most pesticides, particularly insecticides (constituting more than 70% of the patricides used in India), are inherently poisonous. Plant sprayed with pesticides become toxic. However, the toxicity of pesticides is not permanent. Soon after they are applied on a crop, pesticides start breaking down because of the action of plants enzymes or environmental factors such as light, temperature and wind. After sometimes, the concentration of environmental factors such as light, temperature and wind. After sometimes, the concentration of pesticide decreases below maximum reducible limit (MRL), a level of pesticide residue considered safe for daily consumption [13].

During application, some of the pesticides fall on the ground, contaminating the soil. The pesticides are detoxified in the soil by adsorption and degradation. However, their presence in the soil for a long time could adversely affect its fertility, besides contaminating nearby water bodies [14].

Pesticides can also contaminate groundwater as the soil soaks in rain and irrigation water. The presence of pesticides in ground water is a matter of grave concern because pesticides cannot be filtered out by making use of most of the filtration techniques. In addition, if contaminated ground water is used for irrigation, it can be potential source of pollution for crops. The harmful effects of a pesticide depend on its toxicological properties and the degree of exposure of humans to the pesticide residue. Many of these chemicals are deadly not only to the intended or particular organisms, but also to other life forms, including man. Some can be accumulated by lower organisms (aquatic micro- organisms, plant life etc.) and increase in concentration successively goes up the food chain until toxic concentrations are consumed by the higher animals (birds, mammals). This increase in concentration up the food chain is called biological magnification [15].

When magnification of some of the pesticides takes place biologically, the process is known as biological amplification. Several pesticides such as DDT and other chlorinated hydrocarbons have persistent effectiveness of their residual deposits. The biological amplification takes place in sequence of an Estonian pyramid. For example, if the concentration of DDT in a water body such as pond is, say, $3.0 \times 10^{-6}$ ppm, it will amplify to $2.5 \times 10$ when it reaches the top of Estonian pyramid, represented by large fish. If this fish is consumed by a person, the presence of heavy dose of DDT will disturb the integrity of blood molecules and hence lead to illness. The bioamplification of DDT is about $10^7$ times the original residue. Hence it is called as ecopoisonous circulation of DDT. DDT has got half-life of 10-15 years. In a further period of 10 – 15 years, 25% of the original amount would still persist.

## Conclusion

In this study Many toxic pesticides such as organophosphates, are active in the environment only for few days or few weeks only. Soil microorganisms decompose these group of pesticides similar to other organic compounds.

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