

## Pesticides and its Effect on Health and Environment

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### ABSTRACT

*Pesticides are the toxic chemical that are released to environment to kill, prevent, control, repel or mitigate the population of harmful pest of agricultural, domestic and industrial setting. The commonly used groups of pesticides are insecticides, fungicides, fumigants and rodenticides. Pesticides serve as a modifier that works as destroying pest. The main purposed of this paper is to critically look out major impact of pesticides towards the health and environment. The different literature of relevant topics are collected and reviewed on their adverse effect to environment and health. Those effects are very harmful to health as well as for the environment therefore control of their used in a proper way is necessary. By properly trained the farmers and other people regarding their effect and process of screening may lessen these pesticide problem.*

**Keywords:** pesticides, mitigate, environmental impact, harmful pest, fumigant, rodenticides

### INTRODUCTION:

Pesticides are toxic chemical substance or mixture of substance or biological agent that are deliberately released into the environment in order to kill, prevent, deters, control, destroy, repel or mitigate population of insect, weeds, rodents, fungi, or other harmful pest in agricultural, domestic and industrial setting. Pesticide serves as regulator or modifiers that work by destroying the pest. In Pesticides are toxic chemical substance or mixture of substance or biological agent that are deliberately released into the environment in order to kill, prevent, deters, control, destroy, repel or mitigate population of insect, weeds, rodents, fungi, or other harmful pest in agricultural, domestic and industrial setting. Pesticide serves as regulator or modifiers that work by destroying the pest. In agricultural field the insecticide are used to increase the production of quality through controlling pest and pest related disease. The main groups of commonly used pesticides are insecticide, fungicides, fumigants, and rodenticides.

Insect are the major fountain of crop vandalism. The use of pesticide has become a common practice and it increased many fold over the past few decade. It estimated that about 5.2 billion pound of pesticide are used worldwide annually (Mahmmod I *et.al*, 2015). Majority of pesticide are not particularly targeting the pest. Even they backwash non-target entity which invoke major problem to the society. It has been assess that only about 0.1% pesticide stretch out the target entity and remaining are taint with the surrounding environment (Darwin S.E *et.al* 2016). Majority of framer unaware about pesticide type, level of poisoning, safety precaution and hazards on health and environment (Yassin *et.al*, 2002).

The over and misuse of pesticide has precedence to immense health problem, economic loss and various environmental problem. The resultant health problem of pesticide includes cancer, birth defect, reproductive problem, liver, kidney, and neural problem etc. In many developing countries majority of pesticide are associated with adverse effect on human health and environment due to the in judicial use of pesticide. On the other hand the overused of pesticide also precedence to the environmental pollution such as water, soil pollution etc and cause imbalance of ecosystem.

### AIM AND OBJECTIVES:

The main aim of present study is too look out the effects of pesticides on health and environment. The second objective is to systematic study of the work done by other author.

### MATERIAL AND METHOD:

Though there was no specific method for reviewing articles. So, different literature of relevant topics were collected and studied thoroughly. Books and journals were collected and studied the article and papers about pesticides and toxicology. Besides library work different websites on internet was searched for necessary data. A notebook, pen pencil, and a pen drive/ hard disk are used as a tool for the present study.

**RESULTS:**

Misuse of pesticide induced tremendous effect on health and environment. The various effects of pesticides on health and environment are as follows -

**Effect of pesticide on health:** Human beings are highly vulnerable to deleterious effect of pesticide due to nonspecific nature, haphazard application or misuse of pesticide. The pesticide enters human body through ingestion, inhalation, penetration (skin) but majority of people get affected via intake by pesticide contaminated food (I Mahmood *et.al*, 2015). Pesticide shows acute as well as chronic effects which are-

**Acute effects of pesticides:**

Acute effects of pesticide include headache, skin irritation, itching, rash and blisters, diarrhea, abdominal pain, nausea, vomiting, blindness etc.

**Chronic effect of pesticide:**

Long term effect of pesticide damage body organ and diseases as follows-

- ❖ **Neurological-** pesticide cause neurological health effects include memory or learning disability, vision, impairment, signaling disability etc.
- ❖ **Immune-** immune effects include hypersensitivity, asthma, and allergic reaction.
- ❖ **Carcinogenic-** pesticide associated with brain cancer, prostate cancer, ovarian cancer etc. It is estimated that worldwide chemical exposure is responsible for 4% of all death from cancer (Abdelbagi An *et.al* 2005).
- ❖ **Endocrine disruptors-** pesticide act as endocrine disruptors as it is interfere with endocrine system by blocking/mimicking, displaying, and the hormone in living organism. Mainly they confirmed estrogenic action as affect the reproductive system such as still birth, miscarriages, and abortion infertility etc. endocrine receptor also mimic insulin thereby block the insulin receptor site and cause diabetes mellitus.
- ❖ **Other-** long term exposure of pesticide also damage liver, lung, kidney etc.

**Table no 1- Different classes of pesticide and its health effect**

(Bernardes FFM, *et.al* impact of pesticide on environment and human health, 2015)

Pesticides	Exposition	Sign and symptom	Treatment
Organophosphorus	Skin, conjunctiva, gastrointestinal tract, and lungs	Muscarinic syndrome and nicotine syndrome, resulting of excess acetylcholine in the synaptic cleft	Maintenance of vital function and cholinesterase levels. Avoid the use of partasympathomimetric agents.
Carbamets	Lungs, gastrointestinal tract and skin	Miosis, salivation, sweating, tearing, behavioral change	Maintance of vital function and cholinesterase levels. Avoid the use of partasympathomimetric agents.
Organochlorin	Lungs, gastrointestinal tract and skin	Dizziness, headache, nausea, vomiting, diarrhea, muscle weakness, mental confusion, anxiety	Maintance of vital function and administer diazepam and Phenobarbital to control seizures.
Pyrethrine and pyrethroids	Lungs, gastrointestinal tract and skin	In coordination prostration, drooling irregular movement of limbs and hypersensitivity to stimuli	Decontamination of the skin and eyes, besides basic maintenance of vital functions.
Triazines	Skin, eye, nose and gastrointestinal tract		
Phenoxy Derivative	Lungs, gastrointestinal tract		
Dipyridyl Derivatives	Skin, eye, nose and gastrointestinal tract		

Glycine Derivatives	gastrointestinal tract and skin		
Dithiocarbamates	They show slow absorption by oral and dermal contact		

Table no 1. The table displayed various classes of pesticides and its impact in human health and their treatment.

### Effect of pesticide on environment:

Mostly farmers and field workers are illiterate or they less educated and they hence applied pesticides without screening and proper specific information, due to which various hazardous effect posed on environment. Myriad use of pesticide without screening on daily basis also affects the non-target organism. Due to irregular screening sometimes they used pesticide abundantly after damaging the crop. Ultimately those are persisting for long time in the environment and causes environmental pollution specially soil pollution. The innumerable use of pesticides also kills the helpful microorganism as a result of which the self fertility property of soil is reduced.

Regarding pesticides it is important to have practical understanding of their physical and chemical properties, since their solubility determine the transportation of surface runoff and absorbing capacity of soil (Bernardes MFF *et al* 2015). In environment the pesticides are tempo rated long distance and their deposition to water causes water pollution. In several cases pest are resistances to a particular pesticide as effect of natural selection, which cause hazards to non-target organism and cause sudden death of that organism. On the contrary, the pesticides which are demoted through photodecomposition, microorganisms, or through physical or chemical reaction. But the un-demoted pesticides are remaining on environment over long time which greatly causes environmental damage. The long time persisting pesticide causes hazards to biodiversity of aquatic or terrestrial organism. Pesticides are entered to aquatic ecosystem that act as toxic agent and causes hazard to aquatic plant and animal.

### SUMMARY AND CONCLUSION:

Worldwide the pest is become the major problem to crop. The myriads use of pesticide without proper screening and knowledge cause great health problem. On the contrary those cause adverse effect to environment such as pollution and causes imbalance of ecosystem. Those problems regarding pesticide are occurring due to the improper knowledge, unaware about pesticide types, level of poisoning, lack of daily screening and awareness about their harmful effect on environment and health (Sharma DR *et al* 2012). The pesticides effects are lessen by organizing awareness program among the farmers, gave special training to them regarding consequences of pesticides, their screening and monitoring methods.

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