
Impact of pesticides and fertilizers on Health and Environment

Mr. Sucha Singh

Assistant Professor

Dr. B. R. A. Govt. College, Kaithal

ABSTRACT

The greatest challenge of mankind today is to feed the growing population and protect the natural resources. Huge population of the world led to the imbalance between human needs and sustainable use of resources. Use of chemical pesticides and fertilizer has increased agricultural productivity but it posed many environmental and health problems. The chemical fertilizers and pesticides used over a long period of time have adverse toxic effects on the agriculture produce and the consumers of the products. It is therefore necessary to reduce the dependence on chemical inputs in agriculture. This is possible only through eco friendly modern methods of agriculture and farming. However, farmers continue to use pesticides and in increasing quantities. In this paper, the effort has been made to examine the health hazards caused due to the use of chemicals in agriculture and also its impact on the environment and human health.

Keywords

Pesticides, Agriculture, Environment, Human health, Sustainability.

INTRODUCTION

Since time immemorial to this day farmers have suffered formation and losses by destructive pests. Insects and plant compete with human for biological use of crops and animals. Pesticides and Fertilizers are widely used in the agricultural production to prevent or reduce losses pests and improve quantity of the produce. There are also many other benefits that may be attributed to pesticides which can be considered as an economic, labor –saving, and tool of pest control. Extensive use of pesticides have serious concerns about health risks arising from the exposure of farmers while applying pesticides or working in treated fields. With most pesticides, the longer you are exposed the greater the chance of harm. Risk depends on the age, gender, individual sensitivity, or other factors. Though pesticides are used to harm only the target pest, but they also harm people or the environment. Pesticides can enter

the human body by breathe, oral exposure, by food, by drinking water containing pesticides, or through dermal exposure to pesticides. Children are more sensitive to pesticides than adults. They breathe in more air and eat more food relative to their body size. Also their developing bodies may not break down some chemicals as effectively as adults. People living near agricultural fields are more vulnerable than urban resident's. Farmers and labor have poor knowledge of the risks associated with the pesticides, and rarely take necessary precautions.

Pesticides & Human Body

A pesticide is a substance used to kill, insects, fungi or unwanted plants. There are thousands of different pesticides in use today. Pesticides are used in houses, shops, offices, storerooms, gardens, farms and in many other places. Most of the pesticides used today are chemicals. Pesticides are quite hazardous, as they can be harmful to humans and other living things. They contaminate land, the air, food crops, water ways, animals and human. In addition to being hazardous to the user, pesticides can also cause great harm and sometimes death to a person or other living things nearby.

Pesticides come in three different forms:

- Solids,
- Liquids
- Aerosols

Pesticides and human body

1 Oral entry

This type of entry is through the food we eat or the liquids we drink. Also, if there is any pesticide on our hands it can get into the body when the hands are licked, when the face is wiped near the mouth.

II Respiratory entry

Pesticide sprays, vapors or powders enters the human body through breathing.

III Dermal entry

Pesticide spray which lands on the body can be absorbed through the skin and eyes.

Pesticides & Environment

Modern pesticides are very effective method of pest control. They nearly kill all target pest and they do it very quickly. Application of these pest controls is easy especially in agriculture, does not require any training etc. use of pesticides and fertilizers make economic as they are cheap and improve the agricultural produce significantly. This has led to the large production of food grain worldwide. Use of pesticides or chemical treatment eradicate the pest organism in very successful manner but still it is short term solution and has highly damaging side affect. In natural food chain systems plants are eaten by animals. These animals are in turn eaten by other animals, which are eaten by other animals, and so on. Along the food chain there are many different ways pesticides can accidentally contaminate animals and plants which could then be eaten by humans. Pesticides can enter the food chain at different points. After an insect pest has been killed by a pesticide the chemical may stay in its body and still be active. If another animal eats the insect's body the pesticide will be transferred to its body and it may also be harmed by the pesticide. The second animal may of course be eaten by a third animal and it too could be harmed by the pesticide and so on. Pesticides are designed to kill and utmost care must be taken when using them, so that non-target animals and plants are not killed. For example, if a house is being sprayed for cockroaches it is important not to harm any of the adults, children and pets such as dogs and cats who may live there and it is also important that every effort is made to protect the rest of the environment. Some pesticides are very poisonous and will last in the environment for a long time where they can poison the land, the water and the air.

There are two type of chemical that pollute environment which is mentioned below:

- **Residual Chemicals:** Pesticides that remains in the soil or on the treated surface and get into environment they can remain poisonous and active for many years.
- **Biodegradable Chemicals:** These chemicals stay active long enough to do the job required and then they break down into simple and harmless chemicals like water and carbon dioxide are known as biodegradable chemicals.

Negative impacts of Pesticides:

- Adverse human health effects: pesticides with toxic substance can have both acute and chronic health effects.
- Farm worker came in direct contact with chemicals. Different pesticides affect different human systems. Poisoning may lead to nausea, respiratory failure, and allergic reactions and even to death.
- Pesticides applied to field to reduce pest-damage. They are also used to protect harvested food to put it undamaged. Both farmers and consumer are inevitably exposed to pesticide residues on their food, it may lead to chronic effects.
- Pesticide can also directly affect other non-target animals. For example, a gardener spraying his garden to kill caterpillars will probably also kill harmless ladybird beetles and praying mantises.
- Pesticides that are applied wrongly, they may find their way into places where they are not wanted, for example, they might be washed into rivers or into the soil.
- Pesticides can enter the food chain through non targeted animal killed through pesticides and effects passes to everyone included in food chain.
- Pesticides used once enter the food chain, it enters in various water eco systems and affects them both in short and long e.g. DDT.
- Contaminating uncovered food and drink or cooking/eating utensils while carrying out a spraying operation.
- Spraying in windy conditions so that the spray drifts away to other areas.

Remedies to overcome adverse Impact: -

Pesticide use is necessary but it is important to protect the environment & human following the rules listed below:

- Ensure that the correct pesticide for the purpose and applied in accordance with the label directions.
- Only targeted areas are need to be treated.
- Only mix or use sufficient pesticide solution that is necessary do not use too much concentrated.

- Always spray in low wind conditions and use little spray drift. Do not spray where the wind exceeds 15 kmph.
- Always ensure that there is no pesticide left at the end of the treatment. Leftover pesticide must be either be used on the next job or buried. If the pesticide is buried there is always the risk that it may contaminate rivers, swamps and underground water supplies. Every effort should be made to reduce the chances of this happening.
- Always ensure that all other people and animals are moved away from the targeted before using the pesticide.
- People who are inside of homes treated are advised to open windows and doors to get rid of any chemical smell and also.
- Ensured that the chemical has dried before people re-enter the house.
- Put all rubbish into the bin and a proper waste management system is must both at micro and macro level.
- Biodegrades solutions are need for farm sector such as non-persistent pesticides or bio fertilizes. These may be answer to the various ill effects.
- Make sure that the community rubbish is handled property.

CONCLUSION

Pesticides have played an important role in providing reliable supplies of agricultural produce at prices affordable to consumers, improving the quantity of produce, and ensuring profits to farmers. Pesticides functions with reasonable certainty and minimal risk to human health and the environment. It has been seen that over use of pesticides and fertilizers lead to serious health hazards for the human being. This is only due to lack of knowledge of the farmers, that how they will effectively use the chemicals which cause less impact on the human and environment. There are many ways to reduce the impact of the chemical used for the agriculture to improve the quality of the product. The only way is to have proper knowledge and handling strictly according to the regulations and also considering the public concerns about pesticide residues in food and drinking water could contribute to reduction of the adverse effects of pesticides on human health and environment. Use of alternative biodegrade solution can help us in protective of environment.

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