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## Letter to Editor

### **Pesticide Use and Health Hazards in India**

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#### **1. Introduction**

India's economy is mainly dependent on agriculture. Green Revolution in India has led huge use of pesticides. Traditionally, pesticides were acknowledged as economic poisons. Pesticides can be classified into insecticides, fungicides, herbicides (weedicides) etc. Pesticides kill the pest by inhibiting or blocking enzymes, neurotransmitters and hormones in the different organs. It kills adult pests or prevents growth and development in young ones. Pesticides kill not only the pests, but also other animals and human beings through air, food and water. Various pesticides also linked to environmental pollution, and shocking effects on non-target species such as honeybees and earthworms.

Pesticides are hazardous to human health and wellbeing. Pesticide traces in food and water are causative agents for chronic health diseases such as immune suppression, hormonal disturbances, reproductive defects, and cancers. Children are at higher health risk of pesticide exposure by dietary intake as they consume more food per unit body weight as compared to adults. Maximum permissible limits is exceeded in many food samples in India. The routine use of pesticide is an occupational hazard.

Pesticides are commonly used poison for Suicidal purpose in India. Agricultural poisoning stands second amongst various methods used for suicide in India. Authentic record revealed that self-

poisoning deaths are 23,172 per year. Several studies showed that the real number could be three times higher. Suicidal and accidental poisoning deaths add up to 80,000 deaths every year. It is due to easy availability of toxic pesticides.

Hazardous pesticides use in India is lower than some developed countries such as the United States of America. In USA only two percent of the population is directly employed in agriculture and ninety-five percent of agriculture is mechanized which causes less contact between farm workers and pesticides. In contrast to this, in India seventy percent of Indian rural households are dependent on agriculture and farm mechanization levels being less than forty-five percent. This leads Indian farming communities in direct contact with pesticides. The toxicological pesticide effects caused malnutrition in these Indian communities. Indian farmers also rarely use safety measures due to lack of education, reasonably priced protective equipment, user regulation and enforcement. Therefore, it results acute toxicity in India.

#### **2. Pesticide use in India**

The pesticide business has effectively produced a myth that pesticides are an unavoidable prerequisite in modern agricultural production, even if food production happened for centuries without use of pesticides. Most of the farmers are unaware of the hazardous effects of pesticides.

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Thus, farmers started using them carelessly, and continue to use till today. Various studies had shown that farmers in India do not use the requisite protecting measures as suggested, affecting their health.

### 3. Problem of pesticide residue

Various studies have revealed that in India food, environment and biological systems including blood samples and breast milk are polluted with pesticides. A recent report published by All India Network Project on Pesticide Residues reveals that pesticide residues were detected in 18.7% of samples, unapproved pesticides were found in 12.5% of samples, and residues above the maximum residue level (MRL) recommended by FSSAI were noted in 2.6% of samples.

### 4. Health implications

Exposure to pesticides and poisoning is a major problem among farmers in India. Exposure to pesticides is also hazardous to agricultural workers, women, children, and consumers as well. Pregnant women and children are the most susceptible groups. They get traces from food and drinks contaminated with pesticide residues. Pesticides get into the body via oral route, nasal passage, eyes and skin. Persistent exposure to multiple pesticides and cocktails can have much complicated health implications. It causes acute health effects such as headache, itching, burning sensation, nausea, vomiting, and weakness; unconsciousness and death in severe poisoning as well. Lipophilic pesticides get accumulated in organs with more fatty content and cause long-term degenerative effects. Pesticides mimic critical hormones in the body and cause unintended results. DDT and its metabolic product DDE behave like estrogenic hormones affecting sexual development.

Some pesticides cause long-term health effects including damage and dysfunction in the nervous system, immune system, hormone system, reproductive system, etc. Such impacts can result in diseases and disorders such as behavioral changes, learning disorders, attention deficit hyperactivity disorder (ADHD), autism; incidence of allergies, infectious diseases; impaired body growth, hormone-related diseases and disorders, sexual development and reproduction, reduced sperm counts, infertility, miscarriages, endometriosis; early puberty, abnormal menstrual cycle, early child birth,

birth defects; various types of cancers such as brain tumor, blood cancers, lung cancer, breast cancer, ovarian, uterine and cervical cancer.

### 5. Precautionary measures

A global campaign is demanding progressive ban on highly hazardous pesticides and phase out all other pesticides at the earliest. Non-chemical methods of food production and household pest management have to be promoted. We should encourage farming communities to opt for sustainable agriculture. To protect children, PAN India has urged Central and State Governments to impose a buffer zone (where use of pesticides should not be allowed) of at least a kilometer for schools, anganwadis, hospitals, human settlement areas, etc.

- Eat fresh, organic foods to avoid food-related exposure.
- Encourage non-chemical farming and support farmer-led local markets- know your food producers.
- Avoid pesticide use near to human settlements, residential areas, schools, anganwadis, health centres, public spaces, water resources, etc.
- Avoid use of toxic household pest management products, cleaning liquids, etc.
- At regulatory level, ban highly hazardous pesticides immediately and phase out all chemical pesticides and adopt agro-ecological practices.

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