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Pesticides In Food And Health Impact

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ABSTRACT

Pesticide residues in food crops have emerged as a significant concern due to their potential implications for food safety and human health. This comprehensive review evaluates the current state of knowledge regarding the presence of insecticide, herbicide, fungicide, and rodenticide residues in various crops, assessing their associated risks and mitigation strategies. The study highlights the widespread use of pesticides in agriculture, driven by the need to enhance crop yields and protect against pests. However, improper application, incorrect selection, and inadequate post-harvest intervals can accumulate harmful residues in produce. Through an extensive literature review, the study analyzes the levels of pesticide residues detected in diverse crops, scrutinizing the analytical methods employed for their determination. Furthermore, it delves into the potential adverse health effects associated with exposure to these residues, including neurotoxicity, endocrine disruption, reproductive issues, and increased cancer risk.

Keywords : pesticides, impact on health, occupational hazards, insecticides, poisoning,.

INTRODUCTION

A pesticide is any substance or mixture intended for preventing, destroying, repelling or mitigating any pest. the production of pesticides in India started in 1952, establishment of plant ,Calcutta. India is now 2nd largest manufacturer of pesticides in Asia after china and ranks twelfth globally.history-4500 yrs-sulphur dusting was used till current day use of organ chlorines and pyrethrins. use of pesticides in the field of agriculture is very effective.

STATISTICS

1. Approximately 80% of the pesticides produced annually in the world.

   2.70% of pesticides poisonings and deaths occur in developing countries,(inadequate occupational safety standards, protective clothing, washing facilities, insufficient enforcement, poor labelling ,illiteracy and insufficient knowledge.

Ideal properties

1.Effective against pest

2.Stability

3.Toxicity

4.Affordable

5.Non-cumulative

6.Effects

CLASSIFICATION

- insecticides (for killing insects)eg-organophosphates ,carbonates.
- herbicides or weed killers (eg-paraquat, glyphosate)
- fungicides (to kill mould or fungi)
- rodenticides (to kill mice ,rats ,moles)
- Fumigants are pesticidents that exits as a gas or a vapour at room temperature.
- other –algaecides(to kill algae) and miticides (to kill moths)

Benefits

- 1. Improving productivity.
- 2. Protection of crop losses/yield reduction.
- 3. Vector disease control.
- 4. Quality of food.

Where are pesticides used

- Forests to control insects and understory vegetation.
- Landscapes, parks and recreational area to control weeds.
- Rights of way along railroads and under electric wires to control vegetation.
- Houses, school, commercial and office buildings to control insects.

- ❖ Boat houses to control fouling organisms.
- ❖ Aquatic sites.
- ❖ Wood products to control wood- destroying organisms.
- ❖ Food preparation areas.
- ❖ Human skin to kill or repel insects.
- ❖ Household pets to control fleas.
- ❖ Livestock to control insects.

Routes

1. Unintentional (accidental)

- ✓ Gastrointestinal absorption from accidental ingestion leading to acute poisonings, respiratory and dermal absorption from surrounding environment.
- ✓ Hand to mouth activity in children.

2. Occupational

- ✓ dermal absorption
- ✓ Inhalation is a common pathway.
- ✓ Ingestion less common but can occur due to poor hygiene or improper use of protective devices.

3. Non occupational pesticide encounters.

- ✓ Accidental or intentional ingestion.
- ✓ Food and water residues contaminated clothing.
- ✓ Reated wood/structures.
- ✓ Residues on animals/carpets.
- ✓ Garden residues
- ✓ Termite control
- ✓ Hazardous waste sites/spills.

4. Perinatal exposure

- ✓ Mother intake and body burden is transferred across the placenta.
- ✓ Breast milk.

Who is most at risk!

1. Fetuses due to mother's diet.
2. Infant through breast milk.

Pesticide related illness

- ➢ Acute pesticide related illness
- ➢ Low level chronic exposure
- ➢ Pre-Conceptional prenatal exposure
- ➢ Endocrine disruption

Action to prevent

- Local level
- National level

Prevention-local level

- Use pesticides **only** when the **benefits** outweigh the risks.
- Avoid cosmetic or scheduled use of pesticides in the home.
- Use integrated pest management (IPM) or non-chemical pest control measures.

If pesticides are necessary

- Store in original containers with child- proof seals, out of reach, in a locked cabinet.
- Educate on the safe use.
- Follow manufacturer instructions.
- Use protective equipment.
- Respect re-entry times.
- Pregnant women should not apply pesticides.
- Use least hazardous chemicals with least dangerous mode of application.

Prevention-national level

- Education campaigns aimed at pesticide users, general population and children.
- Restrict availability or limit use of p.
- Establish and monitor maximum residue limits.
- Surveillance and epidemiological vigilance for acute and chronic pesticide related illness.
- Improve treatment capacities.
- Upgrading the emergency services.
- Strengthening of poison control centers' education of health care providers.

GOVT AGENCIES INVOLVED:

- federal environment protection agency (EPA)
- food and drug administration(FDA)
- US dept of agriculture(USDA)

CONCULSION

- Community health nurses have a pivotal role in conducting various health education programme and mass screening camps at community level to create awareness among general public on various health hazards. Short in –service education programmers, can be conducted periodically for multipurpose health workers to improve their knowledge and skills.