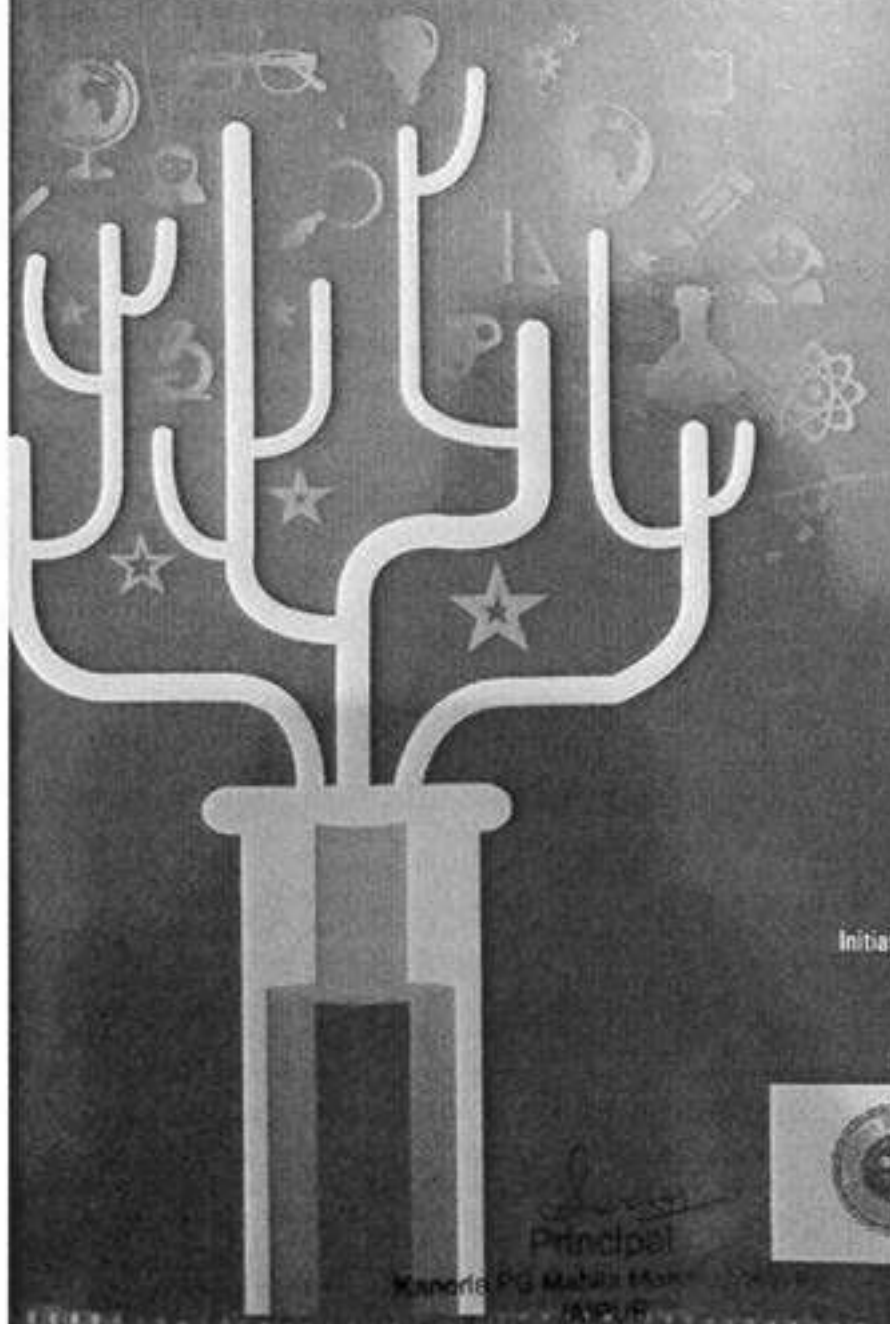


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The core message of the Hindu Spiritual and Service Fair is founded on the confluence and inseparability of nation, divinity and Hindu value system. It means that our nation cannot exist without our divinity and our divinity cannot exist without our nation and neither exist without Hindu value system. The six themes of IMCT are integrated into the value system practiced in the ancient land of India and are exemplified by the divinity.

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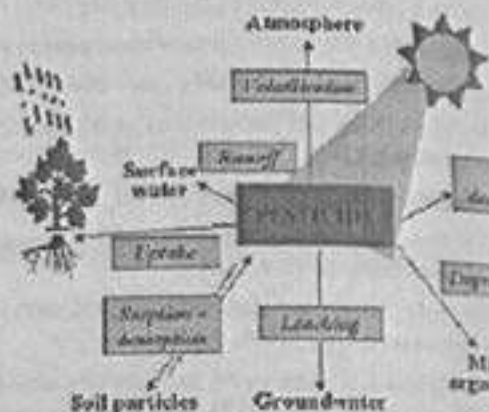
Exposure to Highly Hazardous Pesticides A Major Public Health Concern

Dr. Kumud Tanwar¹, Dr. Aarti Mishra², Dr. Hemlata Sharma³ and Dr. Jaya Mathur⁴

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Highly hazardous pesticides may have acute or chronic toxic effects and pose particular risk to children. Their widespread use has caused health problems and fatalities in many parts of the world, often as a result of occupational exposure and accidental or intentional poisonings. Environmental contamination can also result in human exposure through consumption of residues of pesticides in food and, possibly, drinking-water. Although developed countries have sophisticated systems already in place to register pesticides and control their trade and use, this is not always the case elsewhere. Guidance and legal frameworks on the use, management and trade of pesticides-including highly hazardous pesticides as well as proper storage and handling are available from international organizations and international conventions; these should be implemented globally.

Pesticides are used in agriculture, horticulture and public health for the control of pests such as insects and rodents, disease organisms and disease vectors. They are biologically active compounds designed to kill target organisms. They are also used in veterinary and human medicine to control parasites. Some older pesticides are both persistent and bioaccumulative. Highly hazardous pesticides are defined by the FAO/WHO Joint Meeting on Pesticide Management as having one or more of the following characteristics: acute toxicity (classes Ia and Ib of the World Health Organization [WHO] Recommended Classification of Pesticides by Hazard); carcinogenicity; mutagenicity; reproductive toxicity; listing under the Stockholm Convention on Persistent Organic Pollutants, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Pesticides and Industrial Chemicals in International Trade or the Montreal Protocol on Substances that Deplete the Ozone Layer; or evidence of severe or irreversible adverse effects on human health. (1-5)



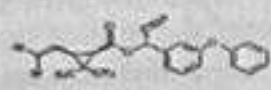
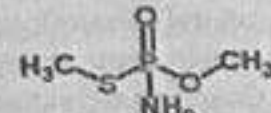
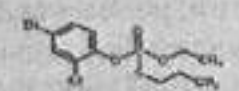
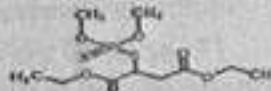

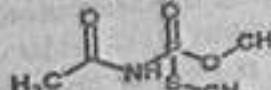
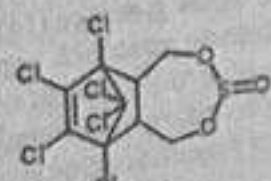
List of pesticides

Table-1 list of pesticide with the structure

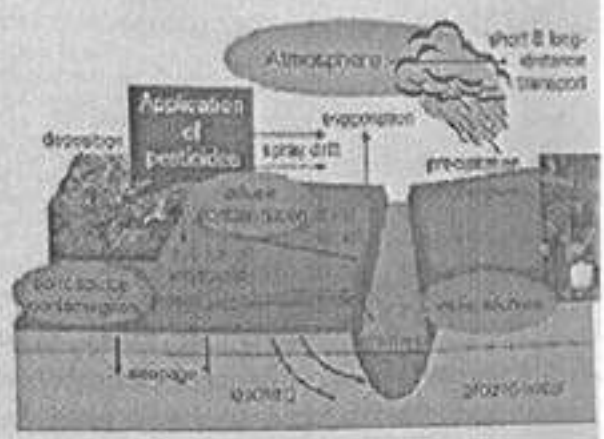
S.No	Name of pesticide	Formula of pesticide	Structure of pesticide
1	Paraquat	$C_{12}H_{14}O_4$	
2	Ethion	$C_{12}H_{16}O_4$	
3	Cypermethrin	$C_{28}H_{34}O_6$	
4	Cyfluthrin	$C_{28}H_{34}O_6$	

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Code	Chapter Name	Author
145	Quantitative estimation of enzymes in <i>Mentha piperata</i> L. and their in-vitro and in-vivo comparison.	Abhimanyu Sharma Deepa Grovar Amla Batra
146	Role of Cationic Surfactant on Electric Parameter of Solar Cell for Generation of Electrical Energy	A.S. Meena P.L. Meena M.L. Meena Jagdeesh Meena
147	Review On Fermentatin Process and Advancements	Kajol Meena Lakshita Paroek Manisha Saini
148	Review Article On Plant Tissue Culture Techniques	Narendra Agarwal Subhash Kumar
149	Review on Organic Farming	Meenakshi Ghanolija Kanta
150	A Review on Environmental Problem Due To Water Pollution	Hemraj Mahawar Mohit Sharma
151	Biofabrication and Characterization of Silver Nanoparticles Using Leaf and Stem Extract of <i>Withania somnifera</i> (L.)Dunal.	Dr. Poonam Dhawan Mr. Utkarsh Kaushik Ms. Shilpi Damor
152	Human Welfare and Technological Growth in Margaret Atwood's novels	Dr. Mukti Upadhyay
153	Phytochemical Study of <i>Ocimum Sanctum</i>	Praveen Goswami Utkarsh Kaushik
154	A Bladeless Funnel Based Wind Turbine For Highway Wind Power Generation	Yashansh Vijay Sachin Goyal
155	The Law Relating to Restraint of Trade with Special Reference to Privatization in india – An Analysis	Dr. Swati Mehta
156	Role of Biotechnology in Social Development through Food Security, Environmental Protection and Poverty Elimination	N K Gupta M C Gupta Sunita Gupta R. S. Sain
157	River basin scale assessment of ecosystem resilience in india	Ashutosh Sharma Manish Kumar Goyal Dr. Ravi Kumar Goyal
158	"Waste to Wealth": A Driving Force to Environmental Sustainability	Dr. Neha Sharma
159	Legislative and Judicial Awareness (A study of indian laws to foster women honor and dignity)	Bhupesh Rathor
160	Ethical and Social Issues of Mobile Phone Technology	Dr. Renu Rajesh
161	in Vitro Propagation of <i>Jatropha Curcas</i> , A Step Towards Sustainable Environment	Siddhartha Barun Poonam Gupta
162	in Vitro Propagation of <i>Jatropha Curcas</i> , A Step Towards Sustainable Environment	Siddhartha Barun Poonam Gupta
163	Exposure to highly hazardous pesticides A major public health concern	Dr. Kumud Tanwar Dr. Aarti Mishra Dr. Hemlata Sharma Dr. Jaya Mathur

7 Dieldrin	$C_{12}H_8Cl_6NO$	
8 Methidathion	$C_8H_{17}NS_2P$	
9 Dieldrin	$C_{12}H_8Cl_6O_2PS$	
10 Azaphos	$C_{10}H_{16}O_2PS_2$	
11 Dieldrin	$C_{12}H_8Cl_6O_2$	
12 Azaphos	$C_8H_{17}NO_2PS$	
13 Endosulphan	$C_8H_8Cl_4O_2S$	

Sources of exposure to highly hazardous pesticides



Agriculture and public health

The greatest exposure to highly hazard pesticides is for agricultural and public health work during handling, dilution, mixing and application. Exposure is mainly by the dermal route for preparation of sprays and by the dermal and inhalation routes during application. Ingestion might occur through consumption of contaminated food during or following work through oral contact with contaminated hands. Contaminated clothing is a significant source of exposure. Bystanders might be exposed to the sprays dermally and via inhalation. Stocks of obsolete pesticides still represent a hazard in many countries, particularly if storage or disposal is inappropriate. Occupants of homes sprayed with highly hazardous pesticides might be exposed through residues on interior surfaces and contamination of food and water (7)



Domestic use

The general population controls pests in public buildings, or smallholdings or in their houses. Products used for domestic use are generally weaker than professional products, so exposure of the general population to highly hazardous pesticides is lower. In countries where regulation is poor, agricultural-strength pesticides are regularly be used in the home.

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Food and drinking-

Water Residues of highly hazardous pesticides can be found in food and environmental media. The general population is exposed mainly through consumption of residues of pesticides in food and, sometimes, drinking-water.

Exposure of children

Children regularly undertake agricultural labour in many areas of the world. Children are particularly at risk of being exposed to highly hazardous pesticides because of their immature behavior. Young children playing may be exposed to pesticide containers, to residues on surfaces and through ingestion of contaminated soil.

Health effects Unintentional and self-inflicted (suicides) acute poisonings by pesticides are a serious public health problem in many parts of the world. Available data are too limited to estimate the global health impacts of highly hazardous pesticides. However, the global impact of self-poisoning from preventable pesticide ingestion was estimated to amount to 186 000 deaths and 4 420 000 disability-adjusted life years (DALYs*) in 2002. (12) The acute hazard is highly variable depending on the pesticide and includes peripheral and central neurotoxicity and reduced blood clotting capacity. The specific pesticide formulation can significantly affect both exposure and toxicity. (13)

Chronic exposure to highly hazardous pesticides can result in effects on skin, eyes, nervous system cardiovascular system, gastrointestinal tract, liver, kidneys, reproductive system, endocrine system and blood. (10) Children are more vulnerable to the effects of pesticides because of their smaller size and hence greater exposure (on a milligram per kilogram body weight basis), different metabolism and still developing internal organs. Although the evidence is less clear, some highly hazardous pesticides may also affect the immune system, and some obsolete pesticides may cause cancer, including childhood cancer. (10)

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Risk mitigation recommendations

WHO produces extensive evaluations of hazards and risks of pesticides, guidance values, advice on medical treatment of poisoning. Its output includes JMPR evaluations (in partnership with FAO), cancer classifications in International Agency for Research on Cancer (IARC) monographs, International Chemical Safety Cards (in partnership with International Labour Organization), Poison Information Monographs, Environmental Health Criteria documents and Concise International Chemical Assessment Documents. (10) In addition, the WHO Pesticide Evaluation Scheme (WHOPES) evaluates new pesticides, health pesticides and makes recommendations for proper use, produces training packages on their management and provides guidance on pest regulation. (7,13) This material provides the basis for mitigating health risks from pesticides in general, including from highly hazardous pesticides.

Elimination and replacement of pesticides

Eliminate the use of persistent highly hazardous pesticides. Several pesticides are classified as persistent organic pollutants (POPs) under the Stockholm Convention. International efforts are being made to eliminate their use. National effort is required to implement these conventions. (1) Trade and transport of these POPs and other persistent highly hazardous pesticides require prior informed consent (PIC) under the Rotterdam Convention. Eliminate the use of pesticides regarded as hazardous under the WHO classification scheme. National effort is required. (2) Consider opportunities for integrated pest and vector management rather than relying primarily or solely on pesticide use. (18)

Regulation, monitoring and surveillance

Establish national regulation of the purchase and use of pesticides-including highly hazardous pesticides and follow guidance (18) on its structure and function. Adequate personnel, appropriately trained, should be available to implement and enforce the regulations. (21) Monitor exposure and conduct health surveillance of users of pesticides and vulnerable populations near

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