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Pesticide Applications-Threat to Ecosystems

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ABSTRACT Many pesticides and chemicals are not biodegradable, and due to bioaccumulation, can enter into food chain and ultimately affect human and animal health. Environmental exposure of pesticides to humans through ecosystems may be during cropping/ agriculture practices, consumption of food materials or air inhalation etc. Without pesticides or agricultural chemicals (herbicides, insecticides, rodenticides, fungicides and plant growth regulators), crop yield could drop by as much as a third and food prices would increase by as much as 75%. In India, 145 pesticides are registered for use at present and production has increased to approximately 85,000 metric tones. Though consumption in India is just about 0.5 kg/ha, but 51% food commodities are contaminated pesticide residues. Toxicity of pesticide is measured according to a number of indices (such as oral and dermal LD50) based on tests carried out on laboratory animals. They act mainly on receptors. In agriculture, mixing–loading step is the most contaminated task in open field accounting for two-thirds of the total daily exposure. Adverse health effects include acute and persistent injury to the nervous system, lung damage, injury to reproductive organs, and dysfunction of the immune and endocrine systems, birth defects and cancer. Even small amounts of some of these chemicals cause death; disrupt hormones and reduce the ability to successfully reproduce; and have been associated with specific cancers. Better understanding of the patterns of exposure, the underlying variability within the human population, and the links between the animal toxicology data and human health effects will improve the evaluation of the risks to human health posed by pesticides. Improving epidemiology studies and integrating this information with toxicology data will allow the human health risks of pesticide exposure to be more accurately judged by public health policy makers. There is need to educate all farmers for judicious use of pesticides, use of biotechnology and bio-pesticides, use of pesticides obtained from natural products such as Azadirachta indica (*neem)* via proper application of integrated pest management (IPM) programs would positively reflect on human health, agriculture, biodiversity and ecosystem management to minimize environmental problems caused by pesticides.