

Risk assessment and management of occupational exposure to pesticides in agriculture

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SUMMARY

Nearly 50% of the world labour force is employed in agriculture. Over the last 50 years, agriculture has deeply changed with a massive utilisation of pesticides and fertilisers to enhance crop protection and production, food quality and food preservation. Pesticides are also increasingly employed for public health purposes and for domestic use. Pesticide are unique chemicals as they are intrinsically toxic for several biological targets, are deliberately spread into the environment, and their toxicity has a limited species selectivity. Pesticide toxicity depends on the compound family and is generally greater for the older compounds; in humans, they are responsible for acute poisonings as well as for long term health effects, including cancer and adverse effects on reproduction. Due to their intrinsic toxicity, in most countries a specific and complex legislation prescribes a thorough risk assessment process for pesticides prior to their entrance to the market (pre-marketing risk assessment). The post-marketing risk assessment takes place during the use of pesticides and aims at assessing the risk for exposed operators. The results of the risk assessment are the base for the health surveillance of exposed workers. Occupational exposure to pesticides in agriculture concerns product distributors, mixers and loaders, applicators, bystanders, and rural workers re-entering the fields shortly after treatment. Assessing and managing the occupational health risks posed by the use of pesticides in agriculture is a complex but essential task for occupational health specialists and toxicologists. In spite of the economic and social importance of agriculture, the health protection of agricultural workforce has been overlooked for too many years, causing an heavy tribute paid in terms of avoidable diseases, human sufferance, and economic losses. Particularly in the developing countries, where agricultural work is one of the predominant job, a sustainable model of development calls for more attention to occupational risks in agriculture. The experience of many countries has shown that prevention of health risk caused by pesticides is technically feasible and economically rewarding for the individuals and the whole community. A proper risk assessment and management of pesticide use is an essential component of this preventative strategy.