OCCUPATIONAL EXPOSURE TO PESTICIDES IN SRI LANKA

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Pesticides are specially formulated liquid or solid preparations of organic or inorganic chemicals, selected from a large number of experimentally synthesised materials for their lethality (preferably selective lethality) to pest organisms, ie. weeds in crops, other unwanted vegetation, insects, fungi, nematodes, molluscs, algae, rodents or indeed any living organism whose "control" would be to man's local advantage. The large range of pest species to be controlled, either by selective toxicity or selective placement, dosage, or timing of application, makes a wide range of chemicals and formulations an imperative need. It is inevitable that there should be a marked variation in the degree and type of toxic hazards presented to man and animals by such a wide range of dissimilar chemicals.

At present there are in Sri Lanka 110 chemicals in more than 210 formulations available in the market classed as pesticides. Many of these chemicals used in agriculture and animal husbandry and the control of disease vectors are of high mammalian toxicity presenting potential risks to man and beneficial organisms. For a better understanding of the toxicity of the pesticides, it is necessary to give due consideration to their chemical characteristics and pharmacological activity in classifying them. Based on this, the pesticides that are formulated can be grouped under the following headings:

(a) Organophosphorus Compounds;
(b) Organocarbonate Compounds.
(c) Organochlorine Compounds;
(d) Miscellaneous Chemicals;

The pesticide ingriedients/concentrates are imported in bulk by the pesticide formulating factories in Sri Lanka. In several cases, they are stocked in unclean, ill-ventilated stores with little attention paid to the damaged containers and possibilities of their contaminating the work environment. In all pesticide work, the greatest hazard lies in the handling of concentrates. In some places such operation is done manually, contaminating the work environment.

In Sri Lankan factories hundreds of workers are employed for formulation repacking of pesticides. The health and safety measures differ from factory to factory and the working environments of the factories are polluted with pesticides in varying degrees. In general a majority of the workers manifest pesticide absorption. The health status of the workers is not checked regularly, but facilities are avialable for the determination of cholinesterase activity in some of the factories. The test will reveal the degree of absorption of organophosphorus compounds by the workers as a result of exposure. 15 per cent of the working population manifest unsatisfactory cholinesterase levels in the formulating factories of Sri Lanka.

More than 10,000 workers are engaged in anti-malaria, anti-filaria and animal husbandry activities in Sri Lanka. Most of them are not monitored for occupational exposure to pesticides. In a study of public health workers exposed to fenthion in Sri Lanka, it was observed that the symptoms likely to result from exposure were more common in the exposed group of workers. It was also evident that spraymen could develop mild symptoms of poisoning without a concomitant depression of blood cholinesterase levels. Further, it was noted that none of the workmen used any form of protective clothing, a situation made worse by poor personal hygiene during spraying. Another study concerning the health status of animal husbandry workers in Sri Lanka reveals that while there is a marked decrease in the cholinesterase activity of the workers, such decrease was not observed in the animals treated with pesticides.

More than 13,000 people per year are either admitted to the various government hospitals in the island as a result of pesticide poisoning or seek treatment for such poisonings; and the number of deaths has been not less than 1,000 per year during the last decade. Among these, nearly 25 per cent are occupational and accidential poisonings due to pesticides. The above figures do not include the victims treated at private hospitals and those who died elsewhere without any form of treatment. Assuming that all the occupational and accidental poisonings occurred among the 472,435 agricultural workers in Sri Lanka, it would appear that 5 out of every 1,000 agricultural workers are hospitalised annually for pesticide poisoning. This is an under-representation of the true state of affairs because the rate refers to all agricultural workers, whereas the majority are plantation workers among whom pesticide poisoning is relatively uncommon and the data relates only to poisonings that relate to poisonings that required hospitalisation in government hospitals.

In Sri Lanka, pesticide poisoning is a notifiable industrial disease under the Factories Ordinance. In 1964 for the first time a case of pesticide poisoning was reported to the Chief Inspector of Factories. Investigation of the above incident revealed that out of the 20 workers who were detailed to spray a particular pesticide 9 were hospitalised as a result of poisoning, one of whom died. In this particular instance, the concentration of the active ingredient after dispensing for spraying, as recommended by the local formulator of this pesticide was found to be 10 times that as practised elsewhere, in other countries.

It is well known that another chemical was responsible for the death of not less than five workers in the field as a result of occupational ex-

There were a few other deaths which on investigation revealed exposure of the victims to pesticides in the pesticide formulating factories. Further, all the victims of pesticide poisoning due to environmental exposure to mixtures of organo-phosphates and organochlorines contained in pesticide formulations produced in the island succumed to death.

When such "toxic" materials are widely distributed, freely available and used in agriculture, often by persons who fail to appreciate the importance of the cautions given on the label or accompanying literature, risks may arise at any stage of use. Containers may be damaged in transit, and cause contamination of food, or effect those handling the consignment. The agricultural or public health user may be splashed by, or otherwise exposed to, the concentrated materials when opening the container, or filling up spraying equipment. He may absorb some of the chemical from repeated or prolonged skin contamination by the diluted material during spraying, or inhale the mist or dust, or swallow traces of the material by conveying it to the mouth through fingers, food, drink, or sucking or blowing out blockages in spray jets.

The Control of Pesticides Act of 1980 provides for: the licensing of pesticides, the regulation of imports, packing, levelling, storage, formulation, transport, sale and use thereof; for the appointment of a Licensing Authority for pesticides; for the establishment of a

Pesticide Formulation Committee and for matters connected therewith or incidental thereto.

One may question whether there is provision for occupational safety and health aspects in the above law. On the other hand, as factories formulating the pesticides come under the purview of the Factories Ordinance, there are general provisions for safety, health and welfare. This deals with the hazards due to toxic chemicals in general terms only and there are no specific regulations framed under the Factories Ordinance with respect to toxic chemicals. Considering the Occupational Safety and Health aspects of pesticides in toto, the Factories Ordinance serves a limited purpose within a limited area of activity.

The above two pieces of legislation do not impose any obligation on:

(a) employers to ensure reasonable safeguards for the health, safety and welfare at work of their employees;

(b) the self-employed and employees to take reasonable care of their own health and safety at work;

(c) employers, the self-employed and employees not to put at risk, by their work activities, the health and safety of others.

In Sri Lanka,the processing areas of liquid pesticide formulations are partially enclosed and supposed to be exhaust ventilated. Infact, in most instances devices for exhaust ventilation have been installed, forgetting the fundamentals of occupational safety and health engineering, thus defeating the purpose of installation of such systems. Hence, in our formulation factories, the environment, the materials including the bottles, parts of exhaust ventilation systems, and the man (the worker and his clothes) are subjected to contamination by pesticides in the working environment. The conditions may differ only in degree but remain the same in most of the factories.

The dry formulations are formulated manually, weighed and packeted. These processes are generally done in the open, under poor occupational safety and health conditions. Such workers are observed to carry out dry formulations with minimum safety precautions.

If work on these processes could be in enclosed areas or if they are partially enclosed and satisfactorily exhaust ventilated then the release of pesticides into the working environment would be at its minimum.

All those who handle or work in environments contaminated/polluted by pesticides should strictly adhere to the principles of pesticides hygiene. Any spill on human beings their clothing or their habitat should be washed off and de-contaminated immediately. Pesticide workers are advised to cleanse thoroughly, with soap and water, their hands and at least the mouth region before partaking of liquid or solid meals; and should be prohibited from smoking, chewing betel, chewing gum, etc. while in the work environment. In case of skin contamination they should bathe immediately this happens.

The following recommendations should be adopted in case of emergency:

In the case of poisoning find out as quickly as possible what class of compound is concerned.

If you can get a container in which the product was packed look at the manufacturer's safety recommendations and first-aid instructions, on the label or leaflet, and carry them out.

Obtain medical assistance by taking the patient to the doctor or to a hospital. Take or send the container, the label or the leaflet with the victim.

In case of emergency and the absence of medical help or advice, administer any active emetic, if you feel sure (from what you are told) that the material has been swallowed.

If the material has not been swallowed, but splashed over the person, arrange prompt and thorough washing of all splashed areas with soap and water, and the removal of contaminated clothing.

If there is a possibility that such cases do appear to be a distinct occurence in your area, make sure that you have atropine sulphate.

EUROPEAN PERSPECTIVE ON THIRD WORLD PESTICIDES

A broad coalition across Europe has called for an end to the un-controlled export of hazardous pesticides to Third World countries. 15 groups from 8 European countries, comprising the European network of PAN International met for the first time in Zurich from 3rd December 1982. The new coalition, PAN Europe, is the latest development in the rapidly expanding network formed earlier last year. With 200 participating organizations from every continent the network represents a constituency of over a million concerned individuals.

PAN Europe pointed to new revelations that the Swiss chemical Company. Ciba-Geigy, has been exporting a cancer-causing pesticide, Galecron, to Third World countries.

The participants expressed their concern over potentially harmful pesticide residues in foodstuffs imported from the Third World for European consumption. PAN Europe calls upon governments, international organizations and the pesticides industry to bring about:

* an end to the double-standard that allows the uncontrolled export of pesticides banned or severely restricted in Europe;
* the expansion of biological and integrated pest management programmes to replace chemical dependence;
* effective international standards for the marketing, labelling, packaging and use of pesticides;

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