

RISK ASSESSMENT OF PESTICIDE CONTAMINATION POTENTIALS IN EMBILIPITIYA AREA

R C Watawala¹, J A Liyanage¹ and A P Mallawatantri²

¹Department of Chemistry, University of Kelaniya,

²US – Asia Environmental partnership, USAID/Colombo.

Embilipitiya is a highly agricultural area, which has consumed a remarkable amount of agrochemicals in last two decades. Hence pesticide movement level studies are necessary to prevent the contamination of soil and water by these pesticides.

Pesticides Impact Ranking Index (PIRI) is a simple computation model, which can be used for ranking pesticides according to their leaching ability and toxicity levels. It requires soil and climatic parameters, chemical and application information of pesticides, etc. The risk levels are indicated as very low, low, medium, high, very high and extremely high according to their leaching and toxicity conditions.

The modeling using PIRI was carried out to rank the most widely used three pesticides, 3,4 DPA, Carbofuran and MCPA, for 14 different soil series present in Embilipitiya area. The risk level frequencies were calculated for each pesticide. For 8 soil series high risk leaching potential was obtained. Carbofuran and Walawa series has extremely high leaching potential than others. In comparison, MCPA has a medium risk potential for 10 soil series. 3,4 DPA has a very low leaching potential for all soils.

Toxicity levels obtained for most of the soil series are low except for Thimbolketiya and Walawa soil series. They have high and medium toxicity levels respectively for carbofuran. Hence the risk level of carbofuran is very high, MCPA is medium and 3,4 DPA is low in different soils present in Embilipitiya area and therefore the usage of Carbofuran needs to be controlled. In pesticide usage and selection, extra care and awareness procedures are necessary to prevent ground water contamination in future.