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**AN INVESTIGATION OF CHLORPYRIFOS IN GROUNDWATER
UNDER ONION CULTIVATION IN KALPITIYA PENINSULA**

A PROJECT REPORT PRESENTED BY

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ABSTRACT

Leaching of agro-chemicals resulting in groundwater pollution is a potential threat in the Kalpitiya Peninsula, where intensive agriculture is being practised in sandy soils with frequent irrigation and heavy application of fertilisers and pesticides. At present, no systematic monitoring of groundwater is being done in the area. This study was conducted to investigate the potential contamination of groundwater with chlorpyrifos using lysimeters, in an onion-cultivated field in the Kalpitiya Peninsula and to assess the level of contamination of well water around the area.

Two lysimeters were installed in the field prior to onion cultivation. After application of chlorpyrifos, the field was continuously irrigated and water samples from lysimeters were collected periodically for 24 hours. In addition well water in and around the field was collected and analysed for pesticide residues. From one well situated within the experimental field, water samples were taken before and 30 hours after application of chloropyrifos. All samples were analysed for chlorpyrifos using gas chromatography.

Results revealed high concentration of chlorpyrifos in water drained from the lysimeters, exceeding the WHO drinking water levels. In addition analysis of well water samples indicated contamination with pesticides, particularly in intensively cultivated areas. Along with chlorpyrifos, unknown pesticide residues were observed in well water. Further analysis with standard references confirmed the presence of dimethoate and diazinone in addition to chlorpyrifos. Chloropyrifos was not detected in the well situated within the field before application of the chemical, but high levels were observed 30 hours after application. The results indicate a potential high risk of groundwater contamination with pesticides in sandy regosols under intensive cultivation.