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Miscellaneous

**International Workshop  
on  
Environmental Management  
in North-East of Sri Lanka**

**December 1- 4, 2003**

Venue :

**Kailasapathy Auditorium,  
University of Jaffna, Sri Lanka**

***Abstracts of Papers***

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**Jointly organized by**

**UNIVERSITY OF JAFFNA**

**EASTERN UNIVERSITY OF SRI LANKA**

**&**

**THE ECONOMIC CONSULTANCY HOUSE (TECH)**

## Potential Contaminants Introduced To Environment From Agricultural Sector in Jaffna Peninsula

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Fate of agrochemicals introduced into soil water and biotic system is important in assessing the environmental pollution caused by these chemicals. In Jaffna peninsula fertilizers and pesticides have been extensively used in cultivation of many crops. Even though these chemicals are used to reduce crop losses and increase crop yields only a fraction of such applied chemicals is utilized for such purpose. The rest is left over in the environment lead to environmental pollution.

Among fertilizers, nitrogen fertilizers are of most concern to environmentalist. Because any nitrogen fertilizer ultimately transformed into nitrate and nitrate readily leached and ultimately end up in ground water pollution. There are many reports on nitrate pollution of ground water of Jaffna peninsula, possibly due to the intense usage of nitrogen fertilizers. Nitrate in vegetables, has been found to be positively correlated with available nitrate in soils. Certain vegetables such as spinach, lettuce, radish and beet roots have been identified as nitrate accumulators. There is a possibility of occurrence of high nitrate content in vegetables grown in Jaffna peninsula, because of heavy fertilizer application and high nitrate contents of ground water used for irrigation. However, so far no studies have been done in this regard.

No studies so far done on the contamination of ground water with pesticides in this area. However pesticides have been continuously used for more than 3 decades in most of the cultivated areas. The pesticide carbofuran, which is classified as highly leachable, has been intensively used by farmers in the peninsula, for more than two decades. In Kalpitiya peninsula which has similar soils of Jaffna, water contamination with carbofuran and nitrate has been reported. This indicates the possibility of contamination by carbofuran

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in ground water of Jaffna too. Other pesticides such as 2,4 D Chlorpyrifos MCPA also have been intensively used for more than two decades in Jaffna. Pollution of ground water by these pesticides have already been reported in other countries.

Occurrence of pesticide residues in vegetables and fruits is another problem. Most farmers in peninsula use pesticides at higher doses in short intervals than recommendation and they do not consider pre harvest interval. Further, few farmers spray insecticides even to the harvested produce to improve the keeping quality. Alarming results of pesticides residues in vegetables and fruits have already been reported in other countries. Many countries have been analyzing pesticide residues in fruits and vegetables and the results are alarming. Many toxic chemicals have been identified in most popular fruits such as apples grapes and straw berries. Such studies are limited in Sri Lanka.

Steps should be taken to reduce further build up of nitrate in ground water. Integrated plant nutrient system, cropping systems management, usage of nitrification inhibitors, cover crops and sprinkler or drip irrigation are few areas where we could concentrate to reduce build up of nitrate in ground water. Ground water quality should be continuously monitored in a systematic manner and remedies should be taken wherever necessary.

Integrated pest management is a viable tool to reduce pesticide pollution. It is also necessary to test the ground water for presence of important potential pesticides used in Jaffna. In addition, studies on pesticide residue in important crops which are heavily sprayed also necessary.

In past very limited research have been undertaken on environmental contaminants. The main reason for this is the limited laboratory facilities available to undertake such studies. Systematic continuous analysis of water and food samples for contaminants requires a well equipped laboratory. Further, training of personal in such analysis also required.