The Chittagong Univ. J. B. Sci.,Vol. 5(1 &2):155-157, 2010.

SHORT COMMUNICATION

PESTICIDE RESIDUES IN WATER SAMPLES OF SOME PADDY FIELDS IN NARAYANGONJ

The surface water bodies have become very much susceptible to pollution by pesticides due to their increased application in agriculture. Indiscriminate use of pesticides for increased crop production leads to the contamination of surface water by run off (Sarkara 2007). The quality of water is very important for agriculture, domestic, municipal and industrial uses. It is suspected that due to agricultural practices, especially increased use of chemical fertilizers and pesticides, water quality problems might have arisen under irrigated areas in Bangladesh as well.

Therefore, the occurrence of agricultural pesticides in water represents a threat to public health and environment. Use of pesticides has to be controlled to avoid contamination of food supplies and water matrix, but present measures in Bangladesh are inadequate and farmers rarely implement standards, allowing sale of unregistered pesticides and misuse (Matin *et al*. 1998). On this background the present work was undertaken to observe the pesticide residues in some water samples from agricultural fields around Narayanganj, Bangladesh. Twenty surface water samples were collected from the most vulnerable sites of paddy fields at Pagla in Narayangonj. Water samples in glass containers were carried to the laboratory of the Agrochemical and Environmental Research Division, Institute of Food & Radiation Biology, Savar as quickly as possible and kept in refrigerator until extraction. Water sample was extracted with double distilled hexane. The combined hexane extract treated with 5-g anhydrous sodium sulphate to remove traces of water was evaporated in rotary vacuum evaporator to a small volume under a mild stream of nitrogen. Clean up was carried out according to DFG (1987). Organochlorine pesticide residues were analyzed by gas chromatograph (GC/ECD) and organophosphorus as well as carbamate pesticides by High Performance Liquid Chromatography (HPLC).

TABLE 1: AMOUNT OF ORGANOPHOSPHORUS & CARBAMATE PESTICIDE RESIDUES IN WATER SAMPLES OF PAGLA, NARAYANGONJ

Sample No.	Organophosphorus	Carbamate
	Diazinon (ppb)	Carbofuran (ppb)
WS2	0.693	ND
WS4	ND	0.276
WS6	2.144	ND
WS8	ND	2.181
WS10	1.062	1.062
WS12	ND	1.218
WS16	0.390	ND
WS18	ND	0.252

WS = Water Sample, ND = Not Detected , Detection Limit = 0.01 ppb

Water samples contained no organochlorine pesticide residues except Diazinon (organophosphorous) and carbofuran (carbamate) and their levels were within the FAO/WHO guideline values. Four samples (WS2, WS6, WS10 and WS16) were found to be contaminated with residues of diazinon and five samples (WS4, WS8, WS10, WS12 and WS18) with carbofuran (Table 1) but the residue levels of diazinon ranged from 0.390 ppb (WS16) to 2.144 ppb (WS6) and of carbofuran from 0.252 ppb (WS18) to 2.181 ppb (WS8). All the values were within the FAO/WHO guideline limits. Water samples did not contain any organochlorine residues like DDT and its metabolites as well as chlorpyriphos, carbaryl, fenitrothion, malathion (organophosphorus pesticides). Most samples contained pesticide residues below detection limit (0.01 ppb). Matin *et al*. (1998) also stated that DDT, DDE and dieldrin were present in some surface water samples of the irrigated crop fields at Gaibandha, and in most cases, their levels were found to be within WHO guideline values for drinking water quality (WHO 1993). Alam *et al.* (1999) found the maximum amount of DDT as 5.7 μg/L and

lindane as 5.084 μg/L in the water samples collected from Meghna-Dhanogoda irrigation project. but in the present study, there was no trace of organochlorine pesticides in water.

REFERENCES

ALAM, M.M., DAS, N.G., RAHMAN, M.M. AND MALEK, M.A. 1999. Organochlorine insecticide residues in water and soil of the Meghna Dhonagoda irrigation project of Bangladesh. *J. Asiat. Soc. Bangladesh, Sci.* **25**(1): 132-142.

DFG 1987. *MANUAL OF PESTICIDE RESIDUE ANALYSIS*. Pesticide Commission, Weinheim, New York, NY: VCH. **1**: 297-307.

SARKARA, B, VENKATESWRALUB, N., RAOB,R.N., BHATTACHARJEEC, C., KALEA,V., 2007.Treatment of pesticide contaminated surface water for production of potable water by acoagulation–adsorption–nanofiltration approach Available at http:// www. aseanenvironment. info/ Abstract/ 41015473.pdf. 2007 Elsevier

MATIN, M. A., MALEK, M.A., AMIN, M.AHMAN, S., KHATOON, J., RAHMAN, M., AMIN UDDIN, M. AND MIAH, A.J. 1998. Organochlorine insecticide residues in surface and underground water from different regions of Bangladesh. *Agric. Ecosys. and Environ.* **69:** 11-15.

WHO (World Health Organization). 1993. *Guidelines for drinking water quality*, 2nd edn. vol.1, (Recommendation). Geneva, Switzerland.

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Manuscript received on 1. 6. 2010; Accepted on 29.9.11
The Chittagong University Journal of Biological Sciences, Vol. 5 (1 & 2). Page No:155-157