JEP> Vol.2 No.6, August 2011

OPEN ACCESS

Levels of Agricultural Pesticides in Sediments and Irrigation Water from Tono and Vea in the Upper East of Ghana

PDF (Size:369KB) PP. 761-768 DOI: 10.4236/jep.2011.26088

Author(s)

Kenneth B. Pelig-Ba

ABSTRACT

Water and sediment samples were taken from selected irrigation dams located at Tono and Vea in the Upper East Region of Ghana and analyzed for organic pesticides using gas chromatography. Sixteen organic residues were identified of which thirteen had at least some trace concentrations ranging from 0.001 to 25.4 µg/L. It was found in the laboratory that the concentrations of DDT, BHC and heptachlor were above the upper limited recommended by WHO and the concentrations of DDT in both reservoirs were higher than 20 times the recommended limits. High concentrations of DDT were found in the water samples while the other two residues were identified in the sediments. The high DDT concentration in water was due to 1) the initial amount of DDT applied and the period in the reservoirs, 2) a half-life of 350 days suggested that much of the DDT originally used was not destroyed if applied less than this period, 3) its low solubility in water did not allow for dissolution and subsequent dispersal in water; 4) the indiscriminate uses of DDT for fishing as confirmed by the local people The high DDT level suggested that the water is not safe for many aquatic organisms and even humans. Generally the levels of these organic residues suggested that the dams have been polluted due to human activities such as farming and the unorthodox method of fishing. Therefore, steps should be taken to reduce the levels of DDT concentrations to preserve the aquatic life in the dams.

KEYWORDS

Pesticides, Sediments, Irrigation Dams, Tono, Vea

Cite this paper

K. Pelig-Ba, "Levels of Agricultural Pesticides in Sediments and Irrigation Water from Tono and Vea in the Upper East of Ghana," *Journal of Environmental Protection*, Vol. 2 No. 6, 2011, pp. 761-768. doi: 10.4236/jep.2011.26088.

References

[1] V. Chaudhary, "Environmental Protection," Pointer Publishers, Rajasthan, 2000, pp. 176-183.

[2] M. A. Appawu, S. K. Dadzie, A. Baffoe-Wilmot and M. D. Wilson, "Lymphatic Filariasis in Ghana: Entomological Investigation of Transmission Dynamics and Intensity in Communities Served by Irrigation Systems in the Upper East Region of Ghana Tropical," Medicine & International Health, Vol. 6, No. 7, 2001, pp. 511-516.

[3] M. W. Holdgate, "A Perspective of Environmental Pollution," Cambridge University Press, Cambridge, 1979.

[4] G. R. Conway and J. N. Petty, "Unwelcome Harvest: Agriculture and Pollution," In: Environmental Protection Agency, Acid Rain, Earthscan, London, EPA-600/9-79- 036, Office of Research and Development, Washington DC, 1991.

[5] M. Huet, "Textbook of Fish Culture: Breeding and Cultivation of Fish," Second Edition, Ch. De. Wyngaent, Brussels, 1970.

[6] D. R. Smith, "Aquaculture Training Manual," 2nd Edition, Type Sector Limited, Hong Kong, 1993, pp. 12-13.

- Open Special Issues
- Published Special Issues
- Special Issues Guideline

JEP Subscription

Most popular papers in JEP

About JEP News

Frequently Asked Questions

Recommend to Peers

Recommend to Library

Contact Us

[7] D. R. Blakely and T. C. Hrusa, "Inland Aquaculture Development Handbook," Fish News Book, 1989, 184 Pages.

[8] E. K. Abban, P. K. Ofori and C.A. Biney, "Fisheries and Aquaculture Development. Assessment of impoundment in West Gonja District, Northern Region," IAB Technical Report, 1994, pp. 36-75.

[9] T. V. R. Pillay, "Aquaculture and the Environment," Type Sector Limited, Hong Kong, 1992, 67 Pages.

[10] G. E. Likens, R. F. Wright, J. N. Galloway and T. J. Butler, "Acid Rain," Scientific American, Vol. 241, 1979, pp. 43-51. doi:10.1038/scientificamerican1079-43

[11] E. Kessler, S. Fredrickson and P. J. Wigington, Paper at 72nd Annual Meeting, Oklahoma Acad. Sci., Tulsa, OK. 1983.

[12] C. Spector, "Nutrient Manager: Focus on pH and Lime," In: The Handbook of Soils and Climate in Agriculture, University of Maryland's Cooperative Extension Service and Department of Agronomy, LaMotte Company, 2001.

[13] C. J. Smith, M. B. Peoples, G. Keerthisinghe and T. R. James, "Effect of Surface Applications of Lime, Gypsum and Phosphogypsum on the Alleviating of Surface and Subsurface Acidity in a Soil under Pasture," Australian Journal of Soil Research, Vol. 32, No. 5, 1994, pp. 995- 1008. doi:10.1071/SR9940995

[14] N. H. Batjes, "Total Carbon and Nitrogen in Soils of the World," European Journal of Soil Science, Vol. 47, No. 2, 1996, pp. 151-163. doi:10.1111/j.1365-2389.1996.tb01386.x

[15] T. G. Scholtz and D. A. Flory, "Clearing up the Confusion," Environment Protection, Vol. 10, 1999,