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Agrochemicals and the Ghanaian Environment, a Review

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ABSTRACT

Agrochemicals are generally recognized as a significant factor in enhancing the ability to meet Ghana's need for sufficient, safe and affordable food and fiber, however, increased usage have led to environmental deterioration. In Ghana agriculture and public health sectors remain the major contributors of pollutants into the environment. This is a systematic review of studies done in Ghana to give an integrated picture of agrochemicals especially pesticides exposure to humans, animals, plants, water, soil/sediment and atmosphere in Ghana. Although the widespread usage of agrochemicals in Ghana has contributed immensely to increased food supply and improvement in public health, it has caused tremendous harm to the environment. Water bodies, fish, vegetables, food, soil and sediment have been found to be pesticide contaminated. There is considerable evidence that farmers have overused agrochemicals especially pesticides. It is evident from biological monitoring studies that farmers are at higher risk for acute and chronic health effects associated with pesticides due to occupational exposure. Furthermore the intensive use of pesticides involves a special risk of for field workers, consumers and unacceptable residue levels in exportable products may serve as barrier to international trade. This review will set the future course of action of different studies on agrochemical usage and pesticide exposure in Ghana.

KEYWORDS

Ghana, Agrochemicals, Environment, Pollution, Exposure

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References

- [1] P. F. Carvalho, " Agriculture, Pesticides, Food Security and Food Safety," *Environmental Science and Policy*, Vol. 9, No. 7-8, 2006, pp. 685-692. doi:10.1016/j.envsci.2006.08.002
- [2] M. I. Tariq, S. Afzal, I. Hussain and N.Sultana, " Pesticide Exposure in Pakistan: A Review," *Environment International*, Vol. 33, No. 8, 2007, pp. 1107-1122. doi:10.1016/j.envint.2007.07.012
- [3] FAO, " Fertilizer Use by crop in Ghana," FAO Corporate Document Repository, Rome, 2005.
- [4] Ministry of Food and Agriculture (MOFA), " Agriculture in Ghana: Facts and Figures," Produced by the Statistics, Research and Information Directorate, Accra, 2003.
- [5] FAO, " Scaling soil nutrient balances," FAO Fertilizer & Plant Nutrition Bulletin No. 15, Rome, 2004.
- [6] W. J. Ntow, " Organochlorine Pesticides in Water, Sediment, Crops and Human Fluids in a Farming Community in Ghana," *Environmental Contamination and Toxicology* , Vol. 40, No. 4, 2001, pp. 557-563. doi: 10.1007/s002440010210
- [7] Ministry of Food and Agriculture (MOFA). " National Soil Fertility Management Action Plan," Directorate of Crop Services, Accra, Ghana, 1998.
- [8] J. W. Ntow, H. J. Gijzen, P. Kelderman and P. Drechsel, " Farmer Perception and Pesticide Use Practices in Vegetable Production in Ghana," *Pest Management Science*, Vol. 62, No. 4, 2006, pp. 356-365. doi: 10.1002/ps.1178

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- [9] M. Kyofa-Boamah and E. Blay, " A Study on Pineapple Production and Protection Procedure in Ghana," Ministry of Food and Agriculture, Plant Protection and Regulatory Services Directorate, Accra, Ghana, 2000.
- [10] A. R. Cudjoe, M. Kyofa-Boamah and M. Braun, " Selected Fruit Crops (Mango, Papaya and Pineapple)" Handbook of Crop Protection Recommended in Ghana, an IPM Approach, Ministry of Food and Agriculture/Plant Protection and Regulatory Services Directorate/GTZ. Accra-Ghana, Vol. 4, 2002, pp. 60-63.
- [11] E. Aboagye, " Patterns of Pesticide Use and Residue Levels in Exportable Pineapple (Ananas Cosmosus L. Merr)" M.Phil Thesis, University of Ghana, Legon, Ghana, 2002.
- [12] F. A. Yeboah, F. O. Mensah and A. K. Afreh, " The Probable Toxic Effects of Aerosol Pesticides on Hepatic Function among Farmers at Akomadan/Afrancho Traditional Area of Ghana," Journal of Ghana Science Association, Vol. 6, No. 2, 2004, pp. 39-43.
- [13] B. Dinham, " Growing Vegetables in Developing Countries for Local Urban Populations and Export Markets: Problems Confronting Small-Scale Producers," Pest Management Science, Vol. 59, No. 5, 1993, pp. 575-582. doi:10.1002/ps.654
- [14] B. Awumbila and E. Bokuma, " Survey of Pesticides Used in the Control of Ectoparasites of Farm Animals in Ghana," Tropical Animal Health and Production, Vol. 26, No. 1, 1994, pp. 7-12. doi:10.1007/BF02241125
- [15] B. Awumbila, " Acaricides in Tick Control in Ghana and Methods of Application," Tropical Animal Health and Production, Vol. 28, No. 2, 1996, pp. 10-16. doi:10.1007/BF02310699
- [16] E. E. K. Clarke, L. S. Levy, A. Spurgeon and I. A. Calvert, " The Problems Associated with Pesticide Use by Irrigation Workers in Ghana," Occupational Medicine, Vol. 47, No. 5, 1997, pp. 301-308. doi:10.1093/occmed/47.5.301
- [17] J. W. Ntow, " Pesticide Residues in Volta Lake, Ghana," Lakes and Reservoirs: Research and Management, Vol. 10, No. 4, 2005, pp. 243-248. doi:10.1111/j.1440-1770.2005.00278.x
- [18] O. Boateng, " External Trade Statistics January - December 1992," Accra, Ghana Statistical Services, 1993, pp. 79-80.
- [19] S. Osafo Acquah and E. Frempong, " Organochlorine Insecticides in African Agrosystem," Vienna: IAEA, IAEA TECDOG-93, 1995, pp. 111-118.
- [20] Ghana, EPA, " Registered Pesticides Handbook," Ghana Environmental Protection Agency, Accra, 2008.
- [21] J. A. Camargo and A. Alonso, " Ecological and Toxicological Effects of Inorganic Nitrogen Pollution in Aquatic Ecosystems: A Global Assessment," Environment International, Vol. 32, No. 6, 2006, pp. 831-849. doi:10.1016/j.envint.2006.05.002
- [22] R. Carson, " Silent Spring," Fawcett Crest, Greenwich, Connecticut, 1962.
- [23] S. Osafo Acquah, " Lindane and Endosulfan Residues in Water and Fish in the Ashanti Region of Ghana," In Environmental Behaviour of Crop Protection Chemicals, Proceedings of Symposium Held 1-5 July 1996 in Vienna by the IAEA/FAO, IAEA, Vienna, 1997.
- [24] G. Darko and S. Osafo Acquah, " Levels of Organochlorine Pesticide Residues in Dairy Products in Kumasi, Ghana," Chemosphere, Vol. 71, No. 2, 2008, pp. 294- 298. doi:10.1016/j.chemosphere.2007.09.005
- [25] A. K. Armah, G. A. Dapaah and G. Wiafi, " Water Quality Studies on Two Irrigation Associated Rivers in Southern Ghana," Journal of Ghana Science Association, Vol. 1, No. 2, 1999, pp. 100-109.
- [26] W. J. Ntow, " Pesticide Misuse at Akumadan to be Tackled," NARP Newletter, Vol. 3, No. 3, 1998.
- [27] F. Botchway, " Analysis of Pesticide Residues in Ghana' s Exportable Cocoa," Higher Certificate Project, Institute of Science and Technology, London, 2000.
- [28] D. K. Essumang, G. K. Togoh and L. Chokky, " Pesticide Residues in the Water and Fish (Lagoon Tilapia) Samples from Lagoons in Ghana," Bulletin of the Chemical Society of Ethiopia, Vol. 23, No. 1, 2009, pp. 19-27.

- [29] L. R. Goldman and S. Koduru, "Chemicals in the Environment and Developmental Toxicity to Children: A Public Health Policy Perspective," *Environmental Health Perspectives*, Vol. 109, No. 9, 2001, pp. 412-413.
- [30] D. C. Goody, P. J. Chilton and I. Harrison, "A Field Study to Assess the Degradation and Transport of Diuron and its Metabolites in a Calcareous Soil," *Science of the Total Environment*, Vol. 297, No. 1-3, 2002, pp. 67-83. doi:10.1016/S0048-9697(02)00079-7
- [31] M. Glover-Amengor and F. M. Tetteh, "Effects of Pesticide Application Rate on Yield of Vegetables and Soil Microbial Communities," *West Africa Journal of Applied Ecology*, Vol. 12, 2008, pp. 1-7.
- [32] B. N. Nuertey, F. M. Tetteh, A. Opoku, P. A. Afari and T. E. O. Asamoah, "Effect of Roundup-Salt Mixtures on Weed Control and Soil Microbial Biomass under Oil Palm Plantation," *Journal of Ghana Science Association*, Vol. 9, 2007, pp. 61-75.
- [33] P. O. Yeboah, S. Lowor and C. K. Akpabli, "Comparism of Thin Layer Chromatography and Gas Chromatography Determination of Propoxur Residues in a Cocoa Ecosystem," *AJST*, Vol. 4, No. 2, 2003, pp. 24-28.
- [34] W. J. Mavura and P. T. Wangila, "Distribution of Pesticide Residues in Various Lake Matrices: Water, Sediment, Fish and Algae, the Case of Lake Nakuru, Kenya," *ANCP inaugural Conference Proceedings*, Tanzania, 2004.
- [35] S. Afful, S. A. Dogbe, K. Ahmad and A. T. Ewusie, "Thin Layer Chromatographic Analyses of Pesticides in a Soil Ecosystem," *West Africa Journal of Applied Ecology*, Vol. 14, 2008, pp. 1-7.
- [36] F. E. Apoh, P. O. Yeboah and D. K. Dodoo, "Persistence of Lindane in Ghanaian Coastal Savanna Topsoil," *Proceedings of the 6th International Chemistry Conference in Africa*, University of Ghana, Legon, 1995.
- [37] E. Adetola, J. K. Ataki, E. Atidepe, D. K. Osei and A. B. Akosa, "Pesticide Poisoning – a Nine Year Study (1989 - 1997)," *Department of Pathology, University of Ghana Medical School and Ghana Standards Board*, Accra, 1999.
- [38] F. O. Mensah, F. A. Yeboah and M. Akman, "Survey of the Effect of Aerosol Pesticide Usage on the Health of Farmers in the Akomadan and Afrancho Farming Community," *Journal of Ghana Science Association*, Vol. 6, No. 2, 2004, pp. 44-48.
- [39] P. O. Yeboah, G. M. S. Klufio, G. A. Dixon, A. Youdeowe, *TCDC Oriented Subregional Workshop on Pesticides Management Report*, FAO, 1989.
- [40] L. K. A. Derban, "Outbreak of Food Poisoning Due to Alkyl Mercury Fungicide on Southern Ghana State Farms," *Archives of Environment Health*, Vol. 28, No. 1, 1974, pp. 49-52.