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Pesticides exposure and risk assessments in the drinking water of kadjebi district of Ghana

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The Kadjebi District is predominantly made of farming communities, hence, the major economic activities is crop productions. The extensive use of Organochlorines, Organophosphates and Synthetic Pyrethroids have raised concern about potential adverse effect on human health and environment. The study assessed the risk associated with pesticides contaminated water in the Kadjebi District of Volta Region, Ghana. Hundred and Nine (109) and Twenty Six (26) questionnaires were administered to farmers and agro chemical sellers respectively to assess the knowledge and awareness about the use of agrochemicals. Thirty Nine (39) water and Sediments samples were collected. Extractions of samples were done and GC-MS techniques were used to analyse the samples. Risk assessment was done using United States Environmental Protection Agency's Guidelines (USEPA, 1996). The study revealed that about 92.6% of farmers used one or more pesticides. Of these numbers, 62% admitted not having access to services of the extension officers on the use and application of pesticides, 68% of the respondents reported clinical symptoms of pesticide poisoning such as nausea, headache, blurred vision, eye irritation, dizziness, vomiting and skin irritation. About 51% of water samples analysed showed positive detections of pesticide residues while all sediments samples showed positive detections of pesticides residues varying from one to five different types of pesticides residues. The common pesticides residues found in the samples were Deltamethrine, Cyfluthrin, Cypermethrin, Dieldrin, Fenvaerate, Lambdacyhal, p,p' DDT. Synthetic pyrethroids (72%) were the dominant residues detected. Deltamethrine, Cyfluthrin, Cypermethrin, Dieldrin, Fenvaerate, were found in the sediments with concentration range of 0.001 mg/kg to 0.014 mg/kg. From the calculated hazard indices, there is no adverse health risk associated with the consumption of the water in both children and the adult. There should be advocacy and awareness creation on the safety and toxicity of pesticides and assessment of other consumable receptors of pesticides residues.

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