HEALTH AND ENVIRONMENTAL RISKS OF WATER RESOURCES CONSUMPTION SOUTH OF DAKAHLIA GOVERNORATE, EGYPT

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Abstract:
In Dakahlia Governorate as in other parts of the Nile Delta, there is a gradual decline in fresh water resource. As a consequence, drainage water is intensively used in irrigation, although heavily contaminated with agricultural and industrial effluents. Also, polluted shallow groundwater is increasingly used in irrigation and other domestic uses. To evaluate the suitability of water resources in south Dakahlia Governorate, thirty samples were carefully selected to represent irrigation canals, agricultural drains and shallow groundwater. The contents of some pesticides (aldrin and endosulfan), heavy metals in addition to major elements were determined.

Generally, the groundwater and drains are relatively enriched in major constituents and heavy metals compared with the irrigation canals. Aldrin pesticide reached 8.6 ppb in the hand tubewells at Beshla area. Endosulfan was will recorded in Tambole, Barhamtoash, El-Bom drains (112, 108 and 55.7 ppb, respectively).

It is concluded that direct drinking of groundwater in the study area may lead to accumulation of heavy metals and pesticides in humans and livestock. Also, the use of contaminant drainage- and ground-water in irrigation may enrich the soil with heavy metals and pesticides to concentrations that may pose potential environmental and health risks in the long-term. There is a need for continuous monitoring of the concentrations of the potentially toxic elements in water resources in south Dakahlia Governorate.

Keywords:
Groundwater, hydrogeology, heavy metals, pesticides, drinking water, irrigation, Dakahlia Governorate.

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