ABSTRACT

Due to scarcity of water, Kenya, as in many other countries, uses wastewater extensively for irrigation. This study was carried out to evaluate levels of contamination of the Kenyan wastewater, the irrigated vegetables produced, and the respective soils. Comparison was also made between vegetables obtained at the farm and those bought at possible market outlets. The area covered was Kibera and the markets included Gikomba, Wakulima and Korogocho. For wastewater and vegetables, emphasis was on bacteriology: total coliform count and presence of Vibrio cholerae and Salmonella Typhi; and parasitology: mainly helminthes (through detection of larvae and eggs) and protozoa; while the soil samples were screened only for parasites. This was done using standard bacteriological and parasitological techniques. High coliform counts were detected from the wastewater and vegetables. They were statistically significantly ($p<0.05$) above the approved WHO accepted levels of 10,000 organisms per 100 milliliters; market vegetables registering statistically ($p<0.05$) higher counts than farm ones. One wastewater sample yielded Vibrio cholerae. These samples, including the soil ones, also yielded various parasites, including Entamoeba hystiolytica, Entamoeba coli, Balantidium coli, Schistosome species, Taenia species and Ascaris lumbricoides. The high total coliform count in wastewater is an indication that the people concerned were using almost raw sewage for irrigation. The various parasites that have been isolated are a ready source for infection to the wastewater users and those that handle and/or consume the resultant vegetables. The isolation of VIbrio cholerae, though from one sample, manifests the danger from pathogenic bacteria. These are areas where people hardly use toilets, so in case of infection (cholera, typhoid fever, etc), the disease will spread very fast through the community. Interestingly, coliform counts were found to be higher on market vegetables than on farm ones. This introduces another possibility of more contamination of the vegetables occurring as they are handled, down the market chain.