Land Use Effects on Soil Quality in Philippi, Western Cape, South Africa

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Purpose: The purpose was to identify the extent of the major problem regarding soil contamination which causes food outbreaks in South Africa and was furthermore driven by the great demand for clean and agriculturally safe farming soil in many third-world countries. The purpose was to investigate the number of pathogens in soil which is used by communities for agricultural purposes. To find out whether there was a link between activities taking place around soil, and the bacteria counts in that soil. Method: Multiple soil samples were tested for E. coli/coliform and Total Viable Count in a laboratory setting. The testing methods were that of the Membrane Filtration Technique and standard plate count agar method in which filtration and incubation procedures were used to count and determine the E. coli/coliform counts. The study areas from which these soil samples were collected, were observed and assessed for risk activities. Results: The E. coli counts ranged from 180 to 590 cfu/g in the soil sources looked at, which labels and classifies this soil as unsafe for farming and agricultural use. These results showed that bacteria counts were well over and exceeded the World Health Organisation and South African soil quality standards of less than 100, 1000, and 30 000 cfu/g for E. coli, coliform, and TVC respectively. Conclusion: It was shown that there was indeed a significant link between the activities taking place around the soil and the bacteria counts of the soil. The risks of outbreaks being linked to soil contamination have been emphasized and demonstrate a great need for a change in farming regulating laws regarding the distance between animals and crops, and re-education of maintaining soil bacteria limits.

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