

ABSTRACT

The Monitoring of Bacterial Indicators of Faecal Pollution in Recreational Waters.

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Seawater samples from selected beaches were monitored regularly over a period of eighteen months using both the membrane filter (MF) technique and the multiple tube technique (MPN). The enumeration of total and faecal coliforms revealed pollution levels which were below the limitations recommended by the E.P.A. (1978) and the A.P.H.A. (1985), the only exception being those beaches which are adjacent to run-off from domestic drains leading waste directly into the sea. The faecal coliform counts obtained from the sewage plant revealed that for both contact stabilization units the range was from 2.0×10^6 to 7.9×10^7 counts/100ml whereas those for the effluent ranged from 2.0×10^5 to 1.4×10^7 counts/100ml.

The coliform counts associated with the beach areas allowed them to be categorised as heavily or moderately polluted and relatively unpolluted. Heavily polluted beaches had faecal coliform counts ranging from 2.0×10^2 to 1.7×10^6 /100ml, whereas moderately polluted beaches gave faecal counts ranging from 1.7×10^1 to 1.6×10^3 counts/100ml. The faecal coliforms associated with relatively unpolluted beaches were of the same magnitude as those observed for

the moderately polluted beaches, being within the required limits of the C.P.A. and the A.P.H.A. regulations on most occasions.

The two methodologies, (MF) and (MPN) were compared both qualitatively and quantitatively and the conclusion reached that, notwithstanding the general acceptance of the (MF) method, the (MPN) method is indispensable to accurate beach monitoring.

Coliform bacteria were isolated during monitoring for further study. Their serological properties were determined as well as pertinent biological characteristics. The analysis of serotypes revealed that a wide variety of different serotypes is picked up by the two methods. None of these serotypes were classical enteropathogenic strains of E.coli. However several possessed O and K antigens associated with virulence properties in opportunistic infections.

Selected strains were tested for their capacity to survive in seawater. The T_{90s} ranged from 10.8Hrs. to 99.0Hrs. depending upon the physical and chemical nature of the seawater.