

## **MICROBIAL IMPACT IN MAJOR TOURIST BEACHES OF KERALA**

Beaches represent the unconsolidated sediment that lies at the junction between water (oceans, lakes and rivers) and land and are usually composed of sand, mud or pebbles. From a recreational viewpoint, sand beaches are sought after. Especially in higher latitudes, a significant percentage of time is spent on the beach itself rather than in the water. Microorganisms are a significant component of beach sand. Bacteria, fungi, parasites and viruses have all been isolated from beach sand. A number of genera and species that may be encountered through contact with sand are potential pathogens. Accordingly, concern has been expressed that beach sand or similar materials may act as reservoirs or vectors of infection. Sewage often is responsible for the harmful microbial levels. In India, beaches are considered as main tourist spots, and hence polluted beaches are a major drawback. There are reports of different skin diseases developed only due to bathing activities in beaches. So adequate awareness should be given to people who go for the recreational activities.

Water samples were collected from Kovalam and Varkala beaches in Thiruvananthapuram, Fort Kochi and Cherai beaches in Kochi and Kozhikode and Muzhupilangadi beaches in Kozhikode district. The laboratory test for faecal contamination was done using Multiple tube fermentation method. Positive tubes with turbidity and gas production were streaked on to MacConkey agar plates for further confirmation. The colonies which developed a metallic sheen were considered to be *E.coli*.

All the samples collected and analyzed show the pollution extent of the tourist beaches of Kerala. Among the sampling area, Fort Kochi beach is the most polluted one with regard to physical and microbial pollution. Land run off and animal faeces are the main source of pollution in the sampling sites. The results obtained in this study shows a high MPN of faecal coliforms which are far beyond the recommended limits. So it is confirmed that there is a serious risk of pathogenic organisms present in Kovalam beach waters, which need to be monitored as soon as possible. There have been reports of sewage contamination and waste disposal in the premises of the beaches recently. This improper maintenance of the beach can cause a serious threat to the foreigners.

The principal microbial risk to human health encountered on beaches and in similar areas is that arising from contact with animal excreta—notably that of dogs, where, for example, such areas are used for exercising pets. Regulations, often local in character, may

restrict access on a seasonal basis to frequently used beaches or place an obligation upon the owner to remove animal excreta. Increased public awareness may help to reduce exposure, especially among young children. While beach cleaning may contribute to the removal of animal excreta, it is more often undertaken for aesthetic reasons or to attempt to remove litter or sharp materials, such as broken glass. The majority of beach management award schemes would not give an award to a resort beach that allowed dogs during the swimming season. In some countries, particularly at resort areas, mechanical sand cleaning is a common practice that can eliminate visible rubbish mixed with sand, reducing the amount of organic matter and therefore reducing the further development of microorganisms. However, mechanical cleaning may disturb sand ecology. Studies that have investigated the microbiological quality of sand have shown that a clear improvement was achieved as a result of raising the general levels of hygiene and cleanliness. Chemical products such as disinfectants are sometimes applied to sand without regard to their effectiveness or possible ecotoxicological effects. When sand treatment is necessary, simple methods, such as sweeping and aeration, could be applied, together with constant beach supervision in order to prevent access by animals. The use of clean towels for use on the beach, good personal hygiene, the prohibition of animals and regular mechanical cleaning are considered, by some authorities, to be important.