INTERANNUAL EVALUATION OF MARINE RECREATIONAL WATER QUALITY BASED ON CLIMATIC FACTORS

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In recent years there has been an increased public awareness and concern regarding the pollution of coastal waters, particularly where the waters have become increasingly used as receiving waters for the discharge of domestic effluents, industrial by-products, agricultural run-off and urban drainage. Although the discharge of point source pollution has now been generally controlled and minimized within the EU and many other developed countries, the control of diffuse effluents is still difficult to manage, and such discharges can pose a significant threat to coastal waters.

Antalya is an important and vulnerable tourism centre on the Mediterranean Coast with its perfect climate, historical and natural beauties. In this study, the effects of climatic factors, population and tourism activities to microbiological sea water quality were researched in Antalya. For this evaluation, climatic factors, population growth, tourism potential and microbiological sea water analysis results were obtained from Turkish State Meteorological Service, Turkish Statistical Institute and Blue Flag Organization. Then the relationship between these parameters and microbiological quality is investigated. The increase in microbiological pollution of sea water was examined for a ten year period. As a result, a general increase in indicator bacteria level was seen. Although climatic factors affect sea water quality, the most important impacts to pollution is population and excess usage. Because of importance of coastal tourism in Antalya, sustainable usage of coastal areas must be provided. In addition, management of these areas has to be taken into consideration and pollution prevention strategies should be determined.

Methods

Seawater samples for indicator bacteria analysis were collected from Antalya coastline, amongst April and October months fortnightly from 2001 to 2010 years. Samples were collected and measured at more than 18 stations in the study site. Water samples were collected 30 cm below surface in inverted sterile bottles on the windward side of boat and kept in ice boxes in the dark before filtration. Water samples were taken during the official batting season. Total (m-Endo media) and Fecal Coliform (m-FC medium), and Fecal Streptococci (Azid medium) determined by membrane filtration technique. Wind speed and direction, and rainfall data were taken from Department of Meteorology, Ministry of Forest and Environment.

Conclusion

We used five years (2001-2010) of rainfall, wind speed and direction, and population data to assess indicator microorganism levels in Antalya Bay. Positive relationship were observed between and indicator bacteria rainfall and population density, whereas inverse relationship observed with wind speed and all variable. Because of indicator bacteria correlates with increased human illness and pathogen levels within water column should be documented to determine human and animal population on the beach. The mean concentrations of microbial indicators in Antalya bay were below guidelines levels during the five years but it also FC and FS showed hyperbolically trend an increase.