

Abstract

The study on the relationship between Total Coliform Bacteria and Water Quality was carried out in Sub-Basin of Nan River in Thawangpha District, Nan Province during August until November, 2009. The samplings were collected at 7 stations. Four were located in the western part of the Sub-Basin covering Huay Nam Rim, Huay Pood, Huay Kua and Hauy Sop Sai. The other three stations were located in the eastern part covering Huay Nam Krai, Lam Nam Yang at Don Moon and Nam Yang at Napha village.

The study results showed that the Total Coliform Bacteria on the western and eastern parts were ranged from 1.55×10^3 to 10.32×10^3 and 0.68×10^3 to 2.70×10^3 most probable number per 100 ml, respectively. The results also showed that the Fecal Coliform Bacteria in the western and eastern parts were ranged from 0.22×10^3 to 0.70×10^3 and 0.09×10^3 to 2.12×10^3 most probable number per 100 ml, respectively. The results also showed that the Fecal Streptococcus Bacteria in the western and eastern parts were ranged from 0.12×10^3 to 1.97×10^3 and 0.02×10^3 to 0.53×10^3 most probable number per 100 ml, respectively. From these results it was possible to analyze that the ratio of Fecal Coliform Bacteria and Fecal Streptococcus Bacteria in the western and eastern parts were ranged from 0.98 to 4.04 and 0.37 to 8.44, respectively.

The relationship between Total Coliform Bacteria and Water Quality in the western part of the Nan River could be demonstrated by the correlation between Biochemical Oxygen Demand and Total Coliform Bacteria with $r=0.978^{**}$, turbidity with $r=0.779^{**}$, suspended solids with $r=0.873^{**}$, and phosphate-phosphorus with $r=0.701^{**}$. In the eastern part of the Nan River, BOD and Total Coliform Bacteria could be correlated with $r=0.887^{**}$. The relationship between Fecal Coliform Bacteria and Water Quality in the western part of the Nan River could be demonstrated by the correlation between BOD and Fecal Coliform Bacteria with $r=0.920$ turbidity with $r=0.825$ and suspended solids with $r=0.814$. In the eastern part of the Nan River, the BOD correlated with Fecal Coliform Bacteria with $r=0.963$. Similarly, the BOD correlated with nitrate-nitrogen with $r=0.754$. The relationship between Fecal Streptococcus Bacteria and

Water Quality in the western part of the Nan River could be shown by the correlation between BOD and Fecal Streptococcus Bacteria with $r=0.947$, turbidity with $r=0.867$, Dissolved Oxygen with $r=-0.671$, and suspended solids with $r=0.857$. In the eastern part of the Nan river, the correlation coefficients between BOD and Fecal Streptococcus Bacteria and between BOD and ammonia-nitrogen were $r=0.724$ and $r=0.719$, respectively.

Finally, the bacteria watch should be exercised during October in Huay Kua sub-basin prior to utilizing water for domestic use and for drinking purpose.