



## Study of Various water quality Indices : A Review

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**Abstract :** One of the most daunting prospects facing water quality scientist is how to turn often very complex water quality data into information which is understandable and usable by non-scientists e.g., managers, planners, and general public. In an attempt to convey the information content of data more simply, resets have been made to produce just one or perhaps a few numbers, which have been designed to integrate the data pool in some way. Such numbers are called indices. All indexing systems require measurements to be made for a selection of water quality determinants. From these measurements, a sub-index rating value is obtained for each determinant. These values are then aggregated to produce the final index score.

Water quality variables frequently exhibit variability in time. This variability may be cyclical with the seasons, steadily (a trend), abruptly (a step-change) or some other established variation over time. It may affect the mean, median, variance, autocorrelation or almost any other aspect of the data. Detection of temporal trends is one of the most important objectives of environmental monitoring. Trend analysis indicates whether pollution concentrations are increasing or decreasing over time. This chapter is focused on presenting commonly used, basic methods for detecting water quality indices and various methods for detecting monotonic increasing or decreasing trends in water quality variables, which may be useful for routine analysis of trends in environmental monitoring.

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### Structure of Various Water Quality Indices:

#### 1. Arithmetic mean water quality index:

This water quality index is an index originally proposed by Horton (1965), also called as the arithmetic water quality index. Many researchers (Brown et al., 1970; Prati et al., 1971; Dinius, 1972) have used this index in their research work.

Several steps of weighted arithmetic index method are given (brown *et al.*, 1972) in the following steps:

#### ➤ Calculation of Sub Index of Quality Rating ( $q_n$ )

Let there be  $n$  water quality parameters where the quality rating or sub index ( $q_n$ ) corresponding to the  $n$ th parameter is a number reflecting the relative value of this parameter in the polluted