WATER POLLUTION DUE TO THE RUBBER FACTORIES IN SRI LANKA: SPECIAL REFERENCE IN NIYADURUPOLA RUBBER FACTORY

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Introduction

Environment is our surrounding and it is one of the most valuable things to the earth surface. The natural environment encompasses all living and non-living things occurring naturally on earth or some region thereof. While defining the term environment; the pollution of the environment is essential to discuss under the recent activities of the world. According to "The Indian Environment (protection), Act 1986", a pollutant has been defined as any solid, liquid or gaseous substance present in such concentration as may be or tend to be injurious to environment(Trivedi, 1992). Under Environmental pollution, water pollution is one of significant problem in the entire world. After industrialization many activities negatively influence to the environment is gradually increasing and the processors of rubber factories is one of the major contribution to increasing the problem of environmental pollution specially water pollution. This study mainly focused to analyze water pollution specially damaging the water quality due to the activities of rubber factories in Sri Lanka with specially reference of Niyadurupola rubber factory. Hypothesis built up as there are relationships between the distance from factory and color of water, usage of water and, smell of the air. It supports to identify the main factor behind the water pollution of the study area.

Methodology

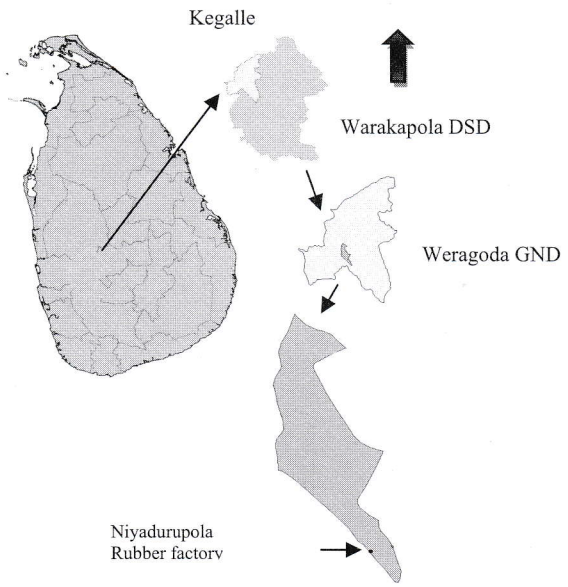


Figure 1: Location map of the study area

To analyze the damaging the water quality both primary and secondary data were used. Questionnaire from 100 people who are living around the Niyadurupola rubber factories were considered to collect the data. In addition; observation and interviews methods were conducted and analyzed the data using both scientific and statistical methods. Chi square analysis used to identify the problems related with some significant factor which supports to increase the water pollution. Surface water samples were collected in Kuda oya stream which is near to the Niyadurupola rubber factory and 7 stations of the stream were considered and collected the water sample from each station (Fig. 1). pH Parameters, Conductivity Parameters, Total Dissolve Solid Parameters and Temperature tested using scientific instruments within the laboratory.

Discussion and conclusion

Relationship between the Distance from the Rubber Factory and Use of Water: Distance from the rubber factory taken as an independent and use of water considered as dependent variables; The relationship of two variables by representing 0.000 of p value. H0 means there is a no relationship with the use of water for drink and distance and H1 means there is a relationship with the use of water for drink and distance. Chi-square value is : ($\propto$= 0.05) . Pearson chi-square value is 46.725(a), df value 12 and p value is 0.000

If there is a relationship between drinking water and distance, p value is should be >0.05. It doesn't record in here. Therefore study was found when the distance is far away from the factory; use of the surface water for drinking is changed.

Relationship between Distance from Factory and Color Changes of Stream Water: The relationship between the distance from the factory as an independent variable and water color changing as dependent variable; study was analyzed. There were relationships between these two variables by representing 0.000 of p value. H0 - There is no relationship with the color change of the steam and distance and H1 – There are relationship with the color change of the steam and distance.

Pearson chi-square value is 27.941(a), df value 4 and p value is 0.000

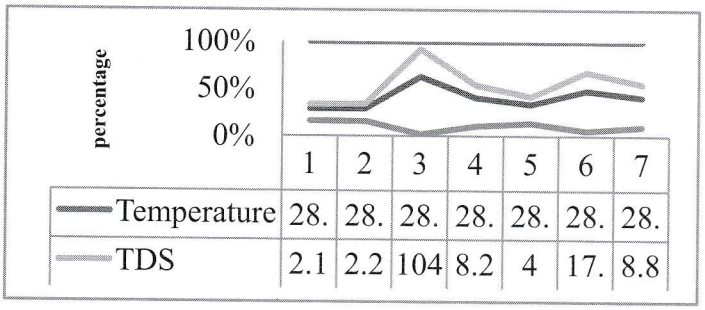
Chi-square: ($\propto$= 0.05), P value of this is >0.05 (.000). Therefore it emphasis the color change of the stream is change near the rubber factory than the faraway from the factory.

The Relationship between Distance from Factory and Air Smells Identified Using the Same Technique: As an independent variable of distance from the factory was a categorical variable and bad air smell as dependent variable it shows the relationship of these two variables by representing 0.000 of p value. H0 - There are no relationship with the air smell and distance and H1 – There is a relationship with the air smell and distance.

Pearson chi-square value is 33.873(a), df value 4 and p value is 0.000

Chi-square: ($\propto$= 0.05).P value of this is 0.000. Therefore study was found when consider the distance is far away from the factory air smell is good or stink smell of air has near to the rubber factory.

Identifying the pollution level of the water in study area and its variations among the stream (Kuda Oya, near to the Niyadurupola rubber factory and collect samples from 7 stations on stream) is more effective in order to recognize the pollution sources.



	1	2	3	4	5	6	7
Temperature	28.	28.	28.	28.	28.	28.	28.
TDS	2.1	2.2	104	8.2	4	17.	8.8

Figure 1: Water Quality Parameters.

Data Source: Field Survey, 2011

According to figure 1; the variations of the pH of the sevens samples with size of the stream. Naturally occurring fresh waters have a pH range between 6 and 8. Only one station the pH value is lower than the standard value. Because some of the rubber waste water directly released to the stream from factory to this station. Therefore water in this area is polluted. And also researcher could observe that there are no fisheries around this area due to the unsuitability of water for survival.

The result of conductivity of the figure 1 shows variation of values of each station. There is a high amount of conductivity in the 3rd station than others and reason behind it that there is a waste water cleaning tanks related to the factory also released to the stream in to this station. Figure 1 also shows the significant pattern of TDS. TDS gradually increased up to 3rd station and then it is gradually decreased in to the next sample point. But cannot see any variations of the before the third station. It is some what far away form the factory than other stations. It supports to find out there was no water pollution far away from the factory. According to the figure 1 it also can be identified variations of the temperature in water samples. Also the 3rd station and the 6th station are representing high amount of the temperature.

The natural environment is contrasted with the built environment, which comprises the area and component that are strongly influenced by humans. Environmental pollution is the act of introduction, by man, of extraneous substances of energy into the environment that induces unfavorable changes.. And all human activities besides producing goods and providing services waste. These wastes called as pollution. These are usually discharged to the sink polluting the environmental components. Rubber factories are the one of man made factor that hugely influence to environmental pollution. Release of polluted things from the factories to the environment leads to contaminate water, air, soil and decrease forest cover. But rubber is one of main plantation cultivation since colonization. Therefore nowadays also it is major export industry in the country. Unfortunately the activities related to the factory highly influenced to the water pollution of the Niyadurupola rubber factory and it shows the influence of rubber factories to the water pollution in Sri Lanka.

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