

Water Analysis and Disinfection

Tabora Girls Secondary School

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Abstract:

Tanzania still faces the problem of water borne diseases despite the use of disinfectants and boiling water which consumes energy, leads to environmental destruction, cause diseases due to the intake of smoke and money wastage. As a result we have come up with a way which is natural and environmental friendly to disinfect water. The method is the usage of sun's energy.

Method:

The objectives of the experiment are:

Identification of the number of people infected by waterborne diseases in the previous year.

Identification of disease causing microorganism, in the sample taken for experimentation.

1. Identification of the number of people infected by waterborne diseases

A research was done on the number of Individuals who are infected with waterborne diseases like Dysentery, typhoid, diarrhea and cholera from 2017 to 2018.

The data was obtained from "Kitete Referral Hospital" in Tabora Tanzania.

2. Identification of disease causing microorganism, in the sample taken for experimentation.

A sample of water is taken from a pond {still water} and examined for the presence of microorganism. The microorganisms in the sample were then identified by their nature, presence and percentage by using portable Incubator.

3. Experimentation

The sample is kept under the sun for disinfection.

In this step the sample is distributed into four different containers which will be exposed to the sun to absorb the sun's energy. One container will be removed each day.

Results:

According to the Information above, it is seen that people are suffering from different waterborne diseases.

Identification of disease causing microorganism, in the sample taken for experimentation.

A sample of water is taken from a pond {still water} and examined for the presence of microorganism. The microorganisms in the sample were then identified by their nature, presence and percentage by using portable Incubator.

The results above show that the three water samples have a good result when placed to the sun for two days and above. The second Sample was placed to the sun for two days, the third sample for three days and the fourth Sample for four days.

For Out Patients Department (OPD)

DISEASES	NUMBER OF PATIENTS Year 2017	Year 2018
Dysentery	89	32
Typhoid	252	86
Diarrhea	68	58

For In Patients Department (IPD)

DISEASES	NUMBER OF PATIENTS Year 2017	Year 2018
Dysentery	23	5
Typhoid	64	21
Diarrhea	275	58

The following data was obtained

SAMPLE NO.	PARAMETERS TESTED	UNITS	RESUL TS	PERCENTA GE %
01	Total Coliforms (TC)	Cfu/100 ml	12	40
	Fecical Coliforms(FC)	Cfu/100 ml	8	26
	E-Coli	Cfu/100 ml	10	33

NOTE: Volume of Sample filtered per each test is 30ml of Sample

$$\text{Inc Colon Count} = \frac{\text{No.Colon Counted}}{\text{Volume of Sample filtered}} \times 100\text{ml}$$

Day 1			
Container	Initial temp. in degree Celsius	Duration	Final temp. in degree Celsius
1	20	5 hours	42
2	20	5 hours	40
3	20	5 hours	38
4	20	5 hours	35

Day 2			
Container	Initial temp. in degree Celsius	Duration	Final temp. in degree Celsius
2	24	9 hours	42
3	24	9 hours	42
4	24	9 hours	42

Day 3			
Container	Initial temp. in degree Celsius	Duration	Final temp. in degree Celsius
3	23	9 hours	43
4	23	9 hours	43

Conclusion:

The aim of this experiment is to come up with a way which is natural and environmental friendly to disinfect water. Some people still use un boiled drinking water perhaps because they cannot afford the cost of fuel when boiling water, So we advice them to use solar energy which is inexhaustible and environmental friendly by simply placing water sun to absorb the solar energy for two days and above.

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