

Experiment of Treatment of Sewage Water

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Abstract- Waste water treatment is the means by which water that has been used and contaminated by humans are nature is restored to a desirable quality. Treatment may consist of chemical biological or physical process are a combination of treatment. It is an process used to remove the contaminants from waste water are sewage convert in to an environment process. Pollutant in waste water are removed ,converted are broken down during the treatment process. The selection will be based on site specific factor such as resource available, climate, land availability, economics etc. There removal of micro organic and which may be cause of dangerous disease

Keywords- Waste water treatment

I. INTRODUCTION

Water food and energy securities are emerging as increasingly important and vital issues for Bangladesh and the world. Most of the river and canals in Bangladesh is polluted and experiencing moderate to severe water shortages, brought on by the simultaneous effects of agricultural growth, industrialization and urbanization. Sewage is a major point source of pollution. Current and future fresh water demand could be met by enhancing water use efficiency and demand management. Thus, wastewater/low quality water is emerging as potential source for demand management after essential treatment.

Also, sewage can be viewed as a source of water that can be used for various beneficial uses including ground water recharge through surface storage of treated water and/or rain/flood water in an unlined reservoir. In order to reduce substantial expenditure on long distance conveyance of sewage as well as treated water for recycling, decentralized treatment of sewage is advisable. Sewage / wastewater treatment consist of different processes which protect the environment & human through cleansing the waterpollutant.1.2 SEWAGE Sewage is the wastewater generated by a community, namely: a) domestic wastewater, from bathrooms, toilets, kitchens, etc., b) raw or treated industrial wastewater discharged in the sewerage system, and sometimes c) rain-water and urban runoff.

Domestic wastewater is the main component of sewage, and it is often taken as a synonym. The sewage low rate and composition vary considerably from place to place, depending on economic aspects, social behavior, type and number of industries in the area, climatic conditions, water consumption, type of sewers system, etc. The main pollutants in sewage are suspended solids, soluble organic compounds, and fecal pathogenic microorganisms, but sewage is not just made up of human excrement and water. A variety of chemicals like heavy metals, trace elements, detergents, solvents, pesticides, and other unusual compounds like pharmaceuticals, antibiotics, and hormones can also be detected in sewage. With urban runoff come potentially toxic compounds like oil from cars and pesticides that may reach the treatment plant and, eventually, a water body.

Sewage treatment is a multi-stage process designed to treat sewage and protect natural water bodies. Municipal sewage contains various wastes. If improperly collected and improperly treated, this sewage and its related solids could hurt human health and the environment.

II. EXPERIMENTAL PROCEDURE

Over the past twenty years, the knowledge and understanding of wastewater treatment has advanced extensively and moved away from empirically-based approaches to a fundamentally-based first-principles approach embracing chemistry, microbiology, and physical and bioprocess engineering, often involving experimental laboratory work and techniques. Many of these experimental methods and techniques have matured to the degree that they have been accepted as reliable tools in wastewater treatment research and practice.

SCREEN CHAMBER: The bar screen chamber is used to separate plastics and other non-decomposable matter from incoming waste water to prevent clogging of pipelines and pumps thereby causing break-downs. The bar screen chamber consists of two screens i.e., a coarse screen followed by a fine screen which are inverted at an inclined angle. Screen chamber is the bar screen chamber is used to separate plastics and other non-decomposable matter from incoming waste water to prevent clogging of pipelines and pumps thereby causing

break-downs. The bar screen chamber consists of two screens i.e., a coarse screen followed by a fine screen which are inverted at an inclined angle.

Experimental Methods in Wastewater Treatment book forms part of the internet-based curriculum in sanitary engineering at UNESCO-IHE and, as such, may also be used together with video recordings of methods and approaches performed and narrated by the authors, including guidelines on best experimental practices. The book is written for undergraduate and postgraduate students, researchers, laboratory staff, plant operators, consultants, and other sector professionals.

PHYSICAL PROPERTIES OF SEWAGE WASTE WATER

The normal temperature of sewage is commonly higher than water supply due to domestic and industrial activities. Depending on geographical location, the mean annual temperature of sewage is in the range of 10 to 21°C. Temperature of sewage is an important parameter because of its effect on chemical reaction rates and aquatic life. Increase in temperature can cause a change in fish species that are present in water bodies. Similarly, oxygen is less soluble in warm water, while some species of aquatic life population increases with temperature causing more demand of oxygen and result in depletion of dissolved oxygen in summer. Similarly, sudden change of temperature cause mortality of species.

Odor - Wastewater that includes sewage typically develops a strong odor.

Temperature - Due to more biological activity, wastewater will have a higher temperature.

Turbidity - Due to suspended solids in wastewater, wastewater will have a higher turbidity, or cloudiness.

Colour - Colour of sewage indicates its strength and age.

BIOLOGICAL PROPERTIES OF SEWAGE WASTE WATER

The secondary treatment can be defined as “treatment of wastewater by a process involving biological treatment with a secondary sedimentation”. In other words, the secondary treatment is a biological process. The settled wastewater is introduced into a specially designed bioreactor where under aerobic or anaerobic conditions the organic matter is utilized by microorganisms such as bacteria (aerobically or anaerobically), algae, and fungi (aerobically). The bioreactor affords appropriate bioenvironmental conditions for the microorganisms to reproduce and use the dissolved organic

matter as energy for themselves. Provided that oxygen and food, in the form of settled wastewater, are supplied to the microorganisms, the biological oxidation process of dissolved organic matter will be maintained. The biological process is mostly carried out by bacteria that form the basic trophic level (the level of an organism is the position it occupies in a food chain) of the food chain inside the bioreactor. The bioconversion of dissolved organic matter into thick bacterial biomass can fundamentally purify the wastewater. Subsequently, it is crucial to separate the microbial biomass from the treated wastewater through sedimentation.

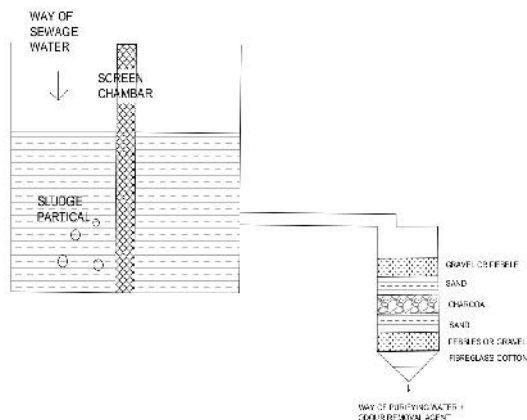
CHEMICAL PROPERTIES OF SEWAGE WATER

In sewage nitrogen is found in a variety of forms like organic nitrogen, ammonia, nitrite, nitrate etc. Fresh sewage mainly contains organic nitrogen and very little inorganic form of nitrogen. On the other hand organic septic sewage contains high inorganic nitrogen and low organic nitrogen.

Organic matter of animal or vegetable origin in wastewater is generally a combination of carbon, hydrogen, oxygen, nitrogen and other elements. If the chemical composition of an organic matter is known then the amount of oxygen required to oxidize it to carbon dioxide and water can be calculated using stoichiometry. This amount of oxygen is known as Theoretical Oxygen Demand. If that oxidation is carried out by bacteria then it is BOD, if by chemical process then it is COD. If a combination of both then it is TheoD.

Wastewater contains chemicals such as nitrogen, phosphorus and levels of dissolved oxygen as well as others that may affect its composition and pH rating. Highly acidic or alkaline wastewater is probably trade waste and will require pre-treatment before discharge to the sewer.

Certain basic or alkaline chemicals used to raise wastewater pH are listed below: CaO (calcium oxide or lime), MgO (magnesium oxide), Ca(OH)₂ (calcium hydroxide, a hydrated form of lime) or Mg(OH)₂ (magnesium hydroxide) are the most commonly used chemicals because of availability, low cost, and high capacity.



PROTOTYPE FOR TREATMENT OF SEWAGE WATER

Table 1 .TESTING OF COLLECTED SEWAGE WATER

S.NO	TEST PARAMETERS	UNIT	TEST RESULTS
1	Color (hazen units)	-	Black
2	Ph value at 25*c	-	8.75
3	Electrical \specific conductivity	Us/cm	5420
4	Total dissolved solids	mg/lit	2250
5	Ammonia as N	mg/lit	452
6	Nitrate as NO3	mg/lit	328
7	Chloride as Cl	mg/lit	378
8	Biochemical oxygen demand (BOD) 27*C ,3 days	mg/lit	258
9	Chemical oxygen demad (COD)	mg\lit	874

Table 2. TESTING AFTER TREATMENT OF WATER

S.NO	TEST PARAMETERS	UNIT	TEST RESULTS
1	Color (hazen units)	-	Colourless
2	Ph value at 25*C	-	8.75
3	Electrical/specific conductivity	Us/cm	3420
4	Total dissolved	mg/lit	1250

	solids		
5	Ammonia as N	mg/lit	157
6	Nitrate as NO3	mg/lit	125
7	Chloride as Cl	mg/lit	189
8	Biochemical oxygen demand (BOD) 27*c, 3days	mg/lit	178
9	Chemical oxygen demand (COD)	mg/lit	534

ODOUR CONTROL

The followings procedure from the experimental investigation

- In those treatment the sewage water only removal of suspended solids and organic matters.
- In the treated waste water have some odor in nature.
- Because, the odor control agent are used in the treatment water.
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- In the name of the agent they are used in INFINIZO SB 444 Waste water bio treatment to control the odor.
- They reduces the odor,organic waste.

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 Emergency Care-Bacterial Consortium Efficient In Treating Residential Waste Water Systems Or Tanks (500 Gm).



PRELIMINARY ANALYSIS

- Preliminary and primary stages remove rags and suspended solids.

- Secondary processes mainly remove suspended and dissolved organics.
- Tertiary methods achieve nutrient removal and further polishing of wastewater.
- Disinfection, the final step, destroys remaining pathogens.
- An finally the agent can able to remove the odor in water.
- And they pH range for the treated water is 6.5 to 8.9
- They are also used in eliminate bottom sludge odor control and murky water

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III. CONCLUSION

The following conclusions were drawn from the experimental investigation

- Wastewater can be reused to improve the scarce supply of fresh water and hold off future investments in water treatment plants.
- Wastewater management should be done together with environmental and health risk management.
- The effective use of dual media filtration helps in further treatment
- The treated water can be reused rather than flowing it to the river or streams.
- Natural resources can be preserved. Environmental balance exist.

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