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Wastewater Management

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Abstract : A dialogue concerning direction for a potential future for the waste water is initiated by identifying the four principal challenges. The first one is the perception by many that water quality and also water pollution problem has been solved. The second one is associated stress on water resources and population growth. The third one is the conflict between providing waste water service to poor and improved water and also by reducing the environmental effects of our system. The fourth one is to determine whether we are more broad water manager or waste water managers. These challenges can be noticed by applying a broader and also more holistic view for incorporating water supply by urban water management and storm water. For achieving more sustainable urban water management system requires professional organization.

Keywords: Wastewater management , stormwater management , urban area , development

I. INTRODUCTION

This paper will speculate the changes that occur through the 21st century that society manage waste water. Waste water management is crude by modern standard. By the end of 20th century, we travel more than 600 km per hour and also visited the moon so in this developed world collection of waste water is common and treatment plants have been established everywhere and also they are being upgraded in order to provide secondary treatment and also to remove phosphorous and nutrients. We are concerning about a variety of other pollutants like personal care products, endocrine disrupters and pharmaceuticals. This paper discusses the waste water technology. The challenges provide basis for identifying the potential solution.

Challenges Faced

1.Growing Population-Growing need

It is known that after several ages of constant human population on earth, the agricultural revolution and industrial revolution initiated huge growth in human population. This historical trend is given below

2.Green or Brown revolution

The green approach is for water supply and sanitization which looks for the issue which is raised immediately. The brown revolution refers to providing service to the poor basically to the urban poor. This originates from air and slums of developing world.

3.Water managers or wastewater managers

Till now anyone can think that this is a useless question but if we think deeply and practically then surely, we can come to know that it is one of the important questions we have to see. If we talk about this point in practical view then we can see that from the very beginning the water managers look over and take responsibility of not wasting the water but the wastewater managers look that how to manage the waste water and how can they make the water suitable for the household use.

II. OBJECTIVES

- One of the objectives is to remove the pollutants by the physical medium.
- The second objective is to remove the pollutants by adding chemicals or by the reaction of chemicals.
- It is useful in improving the quality of waste water.
- It is useful in preservation of quality of water of natural resources.
- It is useful in the prevention from the diseases which can cause health issue to the human beings.

III. SCOPE

- To test the chemical and physical quality of water.
- To find a suitable way for treating waste water.
- To make the method cost effective and efficient.
- To prevent the waste of water in the area.

IV. Methodology

a. Data required

- Total number of buildings.
- Population of that area.
- Harmful contents of water.

b. Methods

i. **Separation of solids**
In this method the solids from the waste water are removed on the basis of their size and weight. There are several methods used to separate the solids are:
- Screening
- Sedimentation
- Flotation
- Filtration

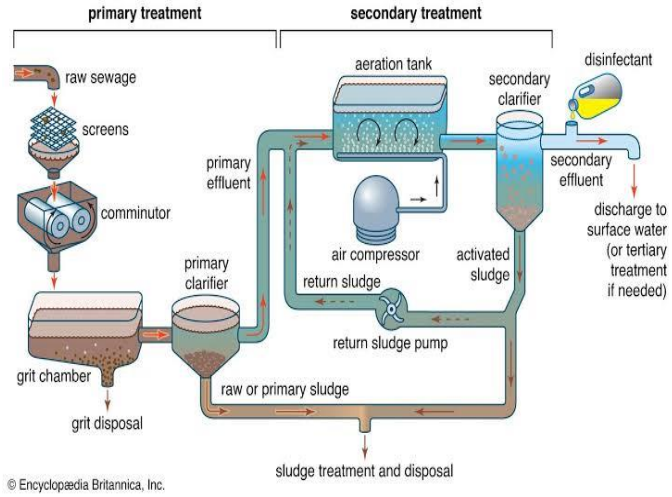
ii. **Sludge accumulation**
After sedimentation the particles that escape filtration get deposited on the bottom. These particles get compacted over time also known as sludge. The removal of these sludge is very important.

iii. **Elimination of nitrogen**
It is very important to remove nitrogen from the water because it leads to algal growth in water. There are mainly two ways of removing nitrogen followed by each other as nitrification and denitrification due to which the pure nitrogen mixes in the atmosphere.

iv. **Elimination of phosphorous**
Phosphorous is a water-soluble nutrient. There is not any appropriate biological method to remove phosphorous from waste water. It can be removed only by removing bacterial mass. It is performed as tertiary treatment.

v. **Elimination of toxic substances**
Most of the metals present in water are toxic and should be removed to save the aquatic life. It is not very difficult to remove the metals from the water because they settle down easily. It is difficult to remove soluble toxic substances because they do not settle down easily. So there are some methods of converting toxic substances into not-toxic substances ex- ion exchange procedure.

vi. **Removal of pathogens**
Pathogens are the bacteria, viruses and protozoa present in sediment sludge. They can stay alive for several weeks in sludges. Most of them die after shorter periods. The bacteria which are suspended in the liquids are not affected and thus leads to harmful effects. So, chlorination is one of the most important and sustainable way of killing these bacteria.



V. RESULTS AND DISCUSSION

Operation stage	Test/sample	1	2	3	4	Avg.
Stage 1 (HRT = 6 h)	BOD_5(mg/l)	25	22	24	20	22.75
	COD(mg/l)	28	25	27	23	25.75
	TSS(mg/l)	0.9	0.6	0.8	0.7	0.75
	Turbidity(NTU)	1.1	0.8	0.9	0.8	0.9
Stage 2 (HRT = 4h)	BOD_5(mg/l)	31	27	24	24	26.25
	COD(mg/l)	34	30	27	26	29.25
	TSS(mg/l)	0.9	0.8	1	0.9	0.9
	Turbidity(NTU)	1.5	1	1	1	1.125
Stage 3 (HRT = 2 h)	BOD_5(mg/l)	120	145	155	148	142
	COD(mg/l)	132	160	170	162	156
	TSS(mg/l)	1.8	1.9	1.8	1.8	1.825
	Turbidity(NTU)	2	2.5	2	2	2.125
Stage 4 (HRT = 6 h by increasing influent BOD and COD to 375 and 416 mg/l, respectively)	BOD_5((mg/l)	32	31	30	30	30.75
	COD(mg/l)	36	35	34	33	34.5
	TSS(mg/l)	0.8	1	0.9	0.9	0.9
	Turbidity(NTU)	/	/	/	/	/
Raw wastewater: COD = 277 mg/l, BOD_5 = 250 mg/l						

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