

A REVIEW PAPER ON STUDY OF PURIFICATION OF SEWAGE WATER BY VARIOUS METHODS

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Abstract - Waste water is the water that has been adversely affected in quality of water by various anthropogenic influences. Effluent from industries as well as sewage from residential colonies has been identified as main cause of water pollution across our country. Sewage water carries waste which normally contains 0.05% to 0.1% of total solids, in solution or suspension that is required to remove from a community. It has characterized by volume or rate of flow, physical condition, chemical characteristics, biological organism it contains. The essentially needed element for the existence of living being is air, water, food, shelter, etc. In that water is the 2nd most important. Many people has been increasing their awareness towards water preservation and reuse. Therefore, new methods for the achievement of the sustainable development of the water resources have been developed at the international level. The BOD, COD, TSS are concentration of sewage range. Various treatment & technologies are adopted to treat sewage water. The treated sewage can be used for the following purposes like drinking, irrigation, toilet flushing, road washing, gardening, etc. thus leading towards water saving/preservation.

Key Words: Sewage water, Treatment, Technologies, Tests(DO, BOD, COD, TSS, etc.).

1.INTRODUCTION

Water is basic necessity of man along with food and air. Fresh water resource usually available are rivers, lakes and underground water reservoirs. About 71% of the planet is covered in water, yet of all of that 96.5% of the planet's water is found in oceans, 1.7% in ground water, 1.7% glaciers and the ice caps and 0.001% in the air a vapor and clouds, only 2.5% of the Earth's water is fresh water and 98.8% of that water is in ice and ground water. Less than 1% of all fresh water is in Lakes Rivers and the atmosphere.

The World Health Organization (WHO) reports that more than 80% of the diseases affecting the human kind are water-borne. The pathogens that cause these diseases often cause the water to reach the carrier, due to the discharge of polluted wastewater containing faecal matter.

Although the role of water in the decrease of the frequency of the development, it is not always obvious, it can be said that the discharge of waste water into rivers and lakes, and is absent or insufficient. treatment can reduce the effectiveness of drinking water treatment system downstream. Also, they may pose a direct threat to the health of those who are in physical contact with such water. The ground water can be contaminated by the disposal of insufficiently treated wastewater. For these reasons, it is essential to properly treat and disposal of wastewater.

For these 30 years or more, efforts towards controlling water pollution in industrialized countries have almost exclusively focused on implementation of expensive centralized collection and treatment programs of municipal wastewater. For example, currently less than 1% of all municipal waste water is discharged untreated in US however, it has been estimated that over one-third of its surface water do not fully support their designated uses. Due to the high level of technical and mechanical nature of concrete and steel, and for the treatment of wastewater, and the service life of such structures is at least 25 to 30 years of age. And that is the reason why the majority of wastewater treatment plants in these countries needs to be repaired or replaced, and there has been a growing dilemma as to how to solve the problem. the address the funding needs for this cause.

Due to the massive growth of the worldwide population, water is one of the scarcest resources in the 21st century, Day, D., 1996). In 2015, the vast majority of the population (more than 5 billion people live in urban areas (united nations, 1997). In 2015, there are 23 megacities with a population of over 10 million people, of which 18 will be in the "third world" (Black, 1994). Any problems relating to the provision of public services and water infrastructure, including the supply of fresh water, and sanitation are central to the phenomenon of urban growth. At the moment, housing, health care, social services, and access to the infrastructure of the basic human needs such as clean water and sewage treatment, is a major challenge for engineers, designers and politicians (Black, 1994; Giles and Brown, 1997).

1.1 Status of wastewater in India

Urine is a liquid by-product of metabolism in humans and many other animals. As the Urine flows from the kidneys through the ureter to the bladder. Pee leading up to the release of urine from the body through the urethra. Human feces or faces in British English is the semisolid or solid remains of food that does not get digested or absorbed in the small intestine of humans, the bacteria in the large intestine to be destroyed. It also contains bacteria and a relatively small amount of metabolic waste products such as dead epithelial cells, and the bacterially altered bilirubin from the lining of the gut. The total amount of waste water that is generated in the 299 in the tier 1 cities, and is 16,652. The 5-million-cubic-meter. Out of this, about 59% is generated by 23 metro cities. The state of Maharashtra alone contributes about 23%, while the Ganga river basin contributes about 31% of the total wastewater generated in class-1 cities. It is only about 72% of the total volume of treated wastewater. Of the 299 in the tier 1 cities, towns, 160 towns and cities will have more than a sewer system. 75% of the population) and 92 cities in more than 50% the coverage of the population. A total of 70% of the total population of the city and, in the case of Class 1, which is decorated with sewage water, an increase of 48% in 1988. Sewer type: open, closed, or in the wiring. The main objective of this study was to perform a review of the treatment of domestic sewage using the aerobic sludge to ensure effective discharge and/or re-use/recycling

1.2 Water Conservation

Water conservation includes all the strategies, policies and activities to sustainably manage these natural resources of fresh water, to protect the hydrosphere, and to meet the current and future human demand. The population growth rate and the size of the household, and abundance can all affect how much water is being used. Factors such as climate change, increasing the pressure on natural water resources especially in manufacturing and agriculture for overhead irrigation. Many countries have already successfully completed the implementation of the water conservation policy. The filtration systems for the home are a variety of ways to make the rain water to absorb. A lot of people in different countries, the maintenance of clean containers so they can boil it and drink it, which is useful to supply water to those in need. It will be collected and filtered rain water can be used for a bathroom and household use, gardening, lawn irrigation, and small scale agriculture.

1.3 Water Recycling

Recycling of waste and wastewater, requires a lot less energy than, for example, in the treatment of salt water desalination system. If the water in the demand for energy and the organic matter needs to increase the recycling of

water is becoming an increasingly more important role to play in your room, and the water supply. Water reclamation is also called wastewater reuse, is the process of converting wastewater into water that can be re-used for any other purpose. Re-use for irrigation of gardens and agricultural fields or in the completion of the surface-water and groundwater (i.e.) recultivation of the water for re-use in place of fresh water and a water-saving measure. When the water is finally discharged back into natural water sources, it can still take advantage of the eco-systems, and the improvement of the river's flow, feed, plants, and fill up with groundwater, and is part of the natural cooling cycle.

1.4 The need for treatment of waste water

In wastewater treatment, is the breakdown of complex organic compounds in the wastewater into simpler compounds are stable and benign, both physically and chemically, or with the aid of micro-organisms (biological treatment). The negative impact on the environment the discharge of untreated waste water into the ground or in the water or on the land, as follows:

1. The decomposition of organic matter in the waste water, which can lead to the formation of large amounts of foul-smelling gas in the air.
2. Left untreated wastewater (sewage) that contains a large number of organic compounds, if they are lost in the river / stream that will consume all the oxygen, in order to comply with the biological oxygen demand (BOD) of the wastewater and, therefore, the destruction of the dissolved oxygen in abundance, so fish kills and other adverse effects.
3. Wastewater can contain nutrients that stimulate the growth of aquatic plants and algae bloom, which in turn leads to the eutrophication of lakes and streams.
4. Untreated waste water usually contains a large number of pathogenic or disease-causing micro-organisms and toxic substances that are present in the human intestinal tract, or they may be present in some of the industrial wastes. They can pollute the soil or the water, in which waste water is processed. In this regard, the treatment of waste water and its disposal is not only desirable, but also necessary.

2. Distillation

Distillation design of distillation is the process of separating the components or substances from a liquid mixture by selective boiling and condensation. Dry distillation is the heating of solid materials to produce gaseous products (which may condense into liquids or solids) Distillation may result in essentially complete separation (in essence, the pure components), or it may be a partial discontinuity, it increases the concentration of each component in the

mixture. In both cases, it is the process of making use of the differences in the relative variability of the components of the mixture. In the industry, the range is a one-time use almost the universal importance, but it is a physical separation process, not a chemical reaction. The first evidence of distillation was also found in Instagram to tablets, which are located in 1200 BC. The tablets that contained the textual evidence that an ancient, primitive form of distillation was known to the Babylonians of ancient Mesopotamia. Early evidence of distillation was also found to be working in Alexandria in Roman Egypt in the 1st century ad. is a must.

2.1 Basic Wastewater Treatment Processes.

a) Physical

The physical processes that were some of the first methods used for the removal of solids from waste water, usually by passing the waste water through the screen to remove impurities and particulate matter. In addition, compounds that are heavier than water, have been silted up from the waste water by the force of gravity. Particles of air will rise to the surface of the water, and can also be removed. These processes are used today in a wide range of modern wastewater treatment plants.

a) Biological

In nature, bacteria and other small organisms in the water, the consumption of organic the substances contained in the waste, turning them into new bacterial cells, carbon dioxide and other by-products. The bacteria that are normally present in the water, it must have oxygen to contribute to the destruction of the water. In the 1920s, scientists have found that these natural processes are able to be retained in, and express check-in systems used for the removal of organic matter from the wastewater. With the addition of the oxygen in the waste water, microbial mass, grow quickly, and instagram to organic pollution. Any excessive increase in the microbial it can be removed from the wastewater by physical processes

b) Chemical

Chemicals that can be used to make changes to the pollutants that increase the removal of these physical processes. A simple chemical substance, such as alum, lime, iron, or salt, can be added to the wastewater to be the cause of certain pollutants, such as phosphorus, to love or to be collected in a large, heavy-weights that have to be removed in order to more quickly as a result of physical processes. Within the last few 30

years, the chemical industry has developed a synthetic inert chemical, which is known as a polymer to improve the physical, the separation phase of the treatment. Polymers are also used in the later stages of the processing of your data for the improvement of the deposition of excessive growth of bacteria. Just paste your text in here click on the "Check Grammar". Click on the colorful phrases, more information for more information about the errors. or use this text too see some of the same problems that have Swallowtails is able to detect. What do you think about grammar? Please do not think that they will not fit.

2.2 Advanced Methods of Wastewater Treatment

a) Carbon adsorption

The carbon adsorption technology for the removal of organic pollutants from waste water, which is opposed to the removal by biological treatment. This will be fixed trace organic substances can contribute to taste and odor problems in water, taint fish flesh, and cause foaming and fish kills. Carbon adsorption is composed of the passage of the waste water by means of a layer, or a container of activated carbon granules or powder, which removes 98% of trace organic compound. Components are attached to the surface of the coal, and the water is removed. To cover the costs of the proceedings, and the carbon beads can be cleaned by heating and re-used.

b) activated sludge process

In activated sludge process wastewater containing organic matter is aerated in an aeration basin in which micro-organisms metabolize the suspended and soluble organic matter. Some of the organic substances are converted into new cells, and some of them are oxidized to CO₂, water and energy. In activated sludge systems the new cells formed in the reaction are removed from the liquid stream in the form of a flocculent sludge in settling tanks. A portion of the plant's biomass, which is described as the activated sludge is returned to the aeration tank, while the other types of waste and excess sludge.

c) Biological Nutrient Removal

BNR) process is a process that is used for the removal of nitrogen and phosphorus from the wastewater before it is discharged into the surface water or the ground water. An increase in the concentration of harmful substances such as nitrogen and phosphorus, in particular, in the discharge of the function of the urban waste water treatment plants, causing cultural eutrophication (enrichment of nutrients as a consequence of human activities on the water.

Summer, algae is a well-known form of nitrogen, and could be a problem for both the environment and humans, low dissolved oxygen, fish, dead, muddy waters, and depletion of essential, flora, and fauna. As for the conventional biological processes and are designed to meet the requirements of the primary and secondary treatment of waste water, in general, do not remove total nitrogen (TN), total phosphorus (TP), as may be necessary for the protection of the receipt of the waste water treatment, waste water treatment facilities are increasingly being required in order to perform processes that will reduce the concentration of nutrients in the waste water to safe levels. This can be a problem for wastewater treatment plants, due to the great technological changes of the plant, such as, the turn of a portion of the air in a swimming pool in the anaerobic and/or, this helps to reduce the aerobic volume and limits the ability to nitrify

3. CONCLUSIONS

This report provides an overview of the various options that can be used in the treatment of wastewater recovery and re-use them. It is apparent that a variety of options are feasible and available for use in the developing water preservation and even more apparent that many low-technology options can be mixed and matched for very high efficiencies. Natural cleaning technologies are attracting a lot of interest in environmental management. Natural treatment technologies are considered to be cost-effective due to their relatively low capital investment, easy operation, longer service life, and the ability to charge from a variety of sources, including treated sewage water for irrigation purposes, the biological source of the fixes in the soil, and the energy in the form of biogas. Which can be stored and use in their form.

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