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Study of Effect of Polymeric Plumbing Materials on Microbial Quality of Water

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Abstract: ***Water quality at point of use is a major concern. The quality of water at the treatment works is potable but it may get degraded significantly during its transport to consumer. The water quality is further affected by the plumbing system of water supply after the distribution system. Microbiological quality of potable water is most important health concern to all people due to the potential of drinking water as carrier of microbial pathogens and cause of following disease in developed as well as appearing economies of the world. However limited studies have been conducted on assessing impact of polymeric plumbing materials on water quality. While the different parameters are affected on the quality of water through the distribution of water in plumbing system to the consumers tap water.***

Keywords: Plumbing System, Water Quality, Microbial, Drinking Water, Polymeric, Parameters, Treatment Process, Distribution System, Biofilm,

I. INTRODUCTION

Safe drinking water is necessary for good public health. Water quality is referred to the chemical, biological, physical, and radiological characteristic of water. It measure of the water condition related to require for human needs and purpose. Water has always been a vital and life-sustaining resource for the survival of human beings. The quality of water is indicated from the presence of contaminants and the characteristics of water.

Generally water is used for drinking purpose and the domestic purpose. The water is to be treated in the water treatment plant and it can be distributed through the individual household. When the water is to be transferred through the distribution system the quality of water is changed during its transportation. And this quality of water consumers cannot too taken into account so it can be harmful for the human health.

Availability of potable water devoid of microbial is necessary to public health. However, drinking water systems are not sterile; rather they refuse a variety of microbial including bacteria, protozoa, fungi, algae, & viruses in bulk water and biofilm. Generally the formation of microbial on the surface of pipes. The important factors influencing biofilm formation are temperature, pipe material, residual disinfectants, nutrients in water and hydraulic condition throughout in premise in plumbing system water distribution system to consumers tap. The biofilm is responsible for the complication of microbial water quality. The biofilms which can produce in distribution systems are made up from the bacteria which are held in polymeric pipes and can increase a chlorine demand, which reducing the protection a□orded by residual disinfectant .The bacteria within these films can also have a number of e□ects on the quality of the water within these systems. So the study of the quality of water changes from distribution system to tap.

II. LITERATURE REVIEW

During the transport through distribution system, the drinking water quality changes. Domestic drinking water systems which include the plumbing between the distribution system to the consumers water tap. This paper describes how the quality of water changes during its stagnation period. And how the microbial parameters are appearing and how it affects on the water quality. And from this analysis it can be conclude that the different parameters are may occur in plumbing system and how they influence in the house water. [1] A unique micro biome establishes in the portion of the potable water distribution system in the household. The utility, location of the pipe rig, pipe material and stagnation all had an influence in the plumbing system. In which the variation are occurred due to the effect of the parameters like temperature, turbidity, quality of the pipe materials, etc. This study gives a unique standardization of the water to the plumbing system and how to be controlled the growth of the bacteria in drinking water as well as domestic water which is harmful for the human health. [2]

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Tap water treated in plants becomes exposed to the various pollutants before it reaches to the consumers water tap. The management of the water treatment processes and water distribution systems regarded as important to the distribution and the supply of the good quality of water. The important factors includes in the formations are turbidity, temperature, pipe materials, nutrients, hydraulic conditions, disinfectants in the distribution system. [3]

The drinking water quality is continuously checked in the distribution system but it cannot check after the distribution through the plumbing system to the consumers tap. The parameters like temperature, pipe materials, diameter of pipe and stagnation period will affects on the quality of water and increase the bacterial growth.by using the no. of samples of household and by comparing them the results of quality of water and the bacterial growth during stagnation are concluded. [4]

III. SCOPE OF STUDY

Availability of potable water devoid of microbial is necessary to public health. However, drinking water systems are not sterile; rather they refuse a variety of microbial including bacteria, protozoa, fungi, algae, archaea & viruses in bulk water and biofilm. Generally the formation of microbial on the surface of pipes. The important factors influencing biofilm formation are temperature, pipe material, residual disinfectants, nutrients in water and hydraulic condition throughout in premise in plumbing system water distribution system to consumers tap. The biofilm is responsible for the complication of microbial water quality.

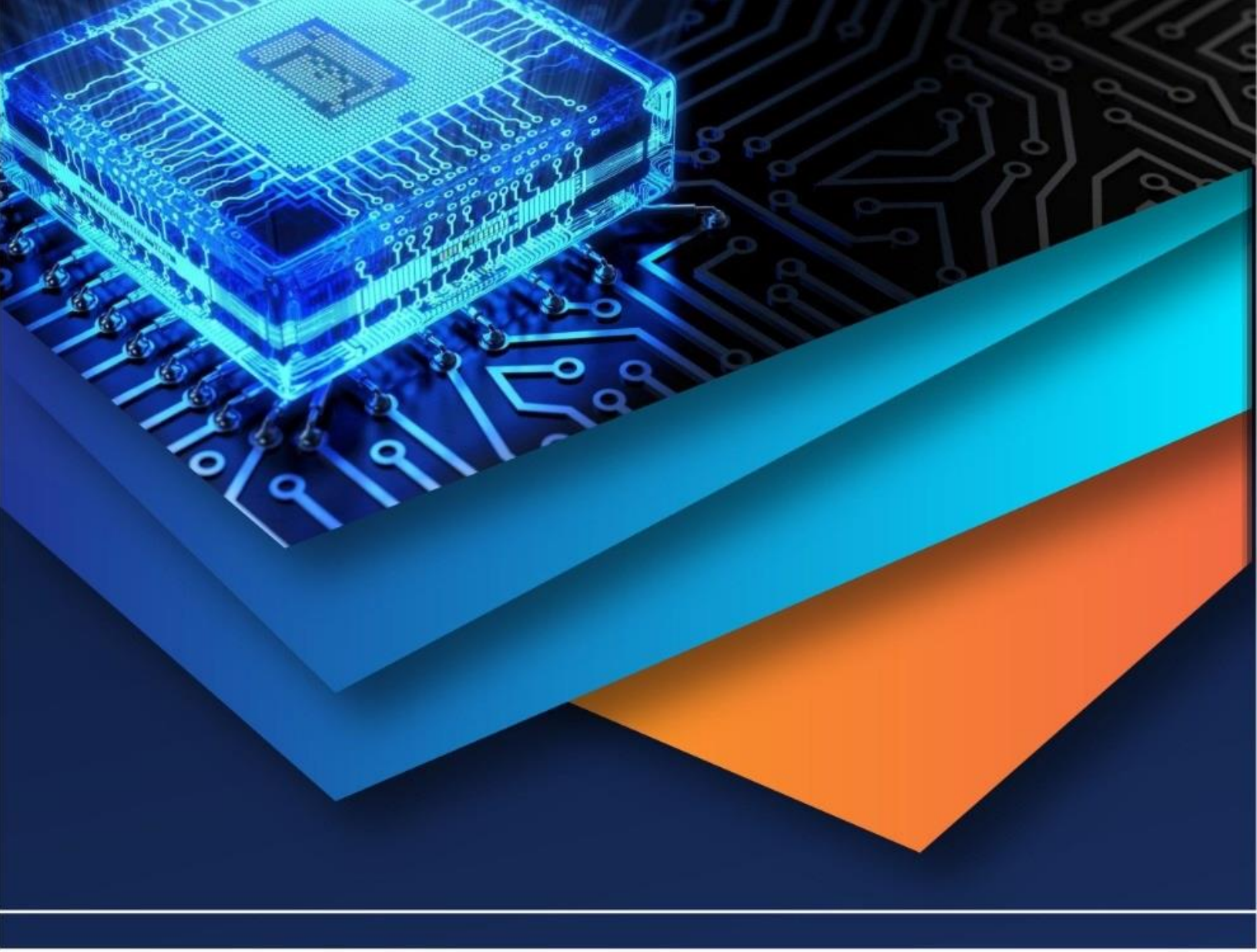
IV. OBJECTIVES

A. To study plumbing system and associated problems at domestic level by conducting surveys.
B. Development of Laboratory setup consisting of pipe of different materials and diameters.
C. To assess water quality within the developed laboratory setup.

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