



## TREATMENT OF WASTE WATER BY HYDRODYNAMIC CAVITATION PROCESS

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**Abstract** -This research paper deals with Treatment of waste water by hydrodynamic cavitation process. In this study the effect of hydrodynamic cavitation was examine for the different time interval from 0 to 120 minutes .In this test pump was used of 0.5 HP and reactor capacity was 30 litres .With hydrodynamic cavitation removal of COD was 67%.

**Keywords:** Chemical oxygen demand removal, hydrodynamic cavitation process

### I. INTRODUCTION

Over the last few years, the contamination of water has created significant environmental concerns, due to organic, as well as inorganic, substances. One of the major reasons for the concern, beside the presence of toxic contaminants, is the quantity of effluents generated, based on the fact that a huge amount of water is being utilized by many industrial, agricultural and household activities. The concerns are compounded as many emerging contaminants, such as pharmaceuticals or pesticides, have been detected in aquatic systems, due to the limitations of conventional technologies. Pharmaceuticals being used for many purposes by humans and in animal husbandry are excreted in feces and/or urine as either parent compounds or as metabolites. Therefore, they can easily enter into the aquatic system via conventionally treated or even untreated wastewater discharge. In the case of pesticides, the occurrence of pesticide molecules and/or their intermediates in the industrial effluents, as well as processed water from the field, is common as a huge amount is used for agricultural activities, and not all will be utilized in the intended activity. The conventional techniques of wastewater treatment are not able to achieve complete conversion of the emerging contaminants to carbon dioxide and water. Thus, advancement in wastewater treatment technologies and methods are targeted to meet the high standards of environmental regulations.

### II. PROCEDURE

For hydrodynamic cavitation, experiments were performed in reactor of capacity 50 litres in which effluent was lifted and circulate by the pump of capacity 0.5 HP for different intervals of time without use of any chemical. Sample was kept for quiescent condition for 2 hours for the settlement of the precipitate. All experiments were The model consist of a 0.5 HP pump attached to the a drum of 50 litre capacity through Pipes carried out in batch mode. Several set of experiments were carried out to check the optimum range of time.

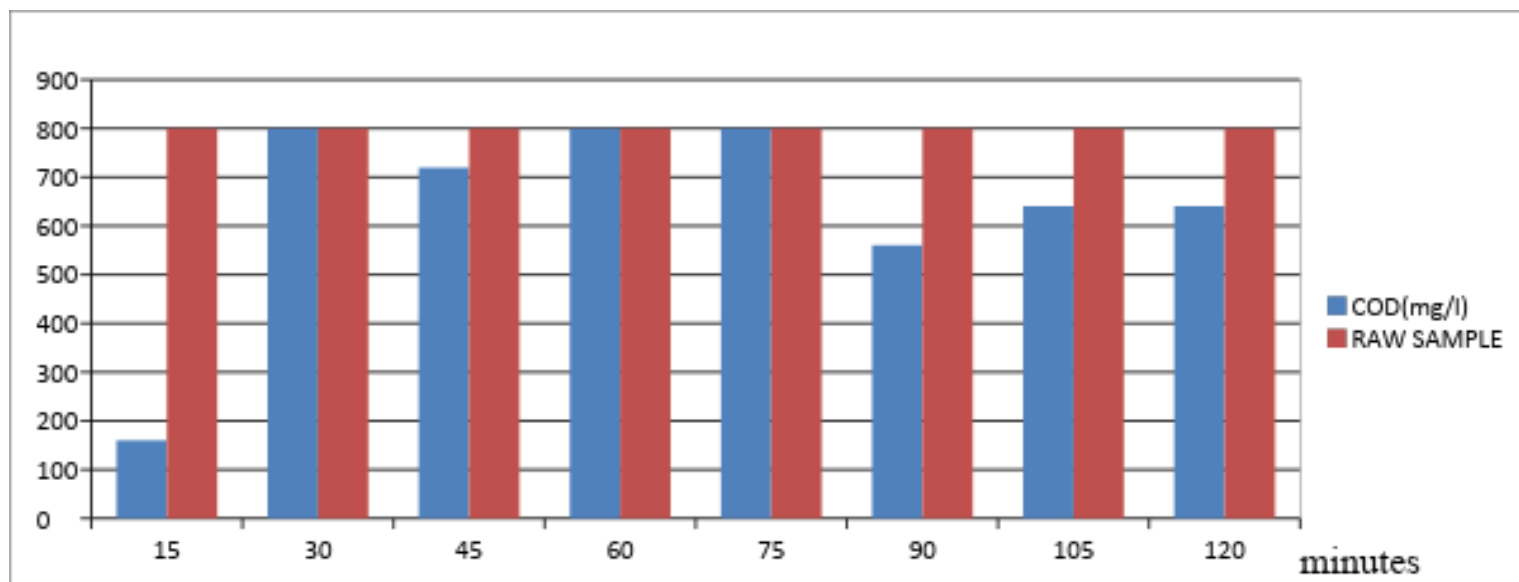
The samples were taken at every 15 minute intervals starting from 15 to 120 minutes at every 15 minute result will be obtained



**Figure 1. Hydrodynamic Cavitation Reactor**

**Table 1. %COD REMOVAL BY HYDRODYNAMIC CAVITATION PROCESS**

| MINUTES | READING | COD(mg/l) |
|---------|---------|-----------|
| 15      | 1.8     | 160       |
| 30      | 1       | 800       |
| 45      | 1.1     | 720       |
| 60      | 1       | 800       |
| 75      | 1       | 800       |
| 90      | 1.3     | 560       |
| 105     | 1.2     | 640       |
| 120     | 1.2     | 640       |



### III. CONCLUSION

Reduction % of COD by Hydrodynamic Cavitation is 67%. As the dilution factor is very high other method will require less or no dilution requirement should be used instead.

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