International Journal of Scientific Research in Engineering and Management (IJSREM)
Volume: 05 Issue: 05 | May - 2021 ISSN: 2582-3930

# COMMON EFFLUENT TREATMENT PLANTS AN ALTERNATE METHOD OF EFFLUENT DISHARGES

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*Abstract—*
During the past 30 years the industrial section in India has quadrupled in size simultaneously the major waste generators in India including the petrochemical, pharmaceutical, pesticide paint, Dye, petroleum, fertilizer , asbestos, caustic soda, inorganic chemicals and general engineering industries.

The bulk of industrial pollution in India is caused by the small and medium scale industries (SMIs) sector. A small scale unit is defined as any industry whose plant and machinery are valued at less that 1 crore (Government is planning to increase this to 5 crore).Though quantity of industrial waste generated by individual SMIs may not be large it aggregates to be as large percentage of the total since almost 3 million SMIs are widely scattered throughout the country. SMls account for over 40 percent of the total industrial output in the country and generate over 44 percent of hazardous wastes alone as compared to 13 percent generated by the large scale industry (Gulati 1997; B.M. Prasad,) Also SMls normally do not budget for resources to meet regulatory standard. The rate of growth of SMls has also exceeded that of the industrial sector as a whole.

Government policies have been biased toward small industries as employment generators even though small industries are highly pollutingthe SSI policy has no thought on the environmental planning. Promotion of small enterprise as widely seen as a desirable way to achieve sustainable development for that result however, their pollution problems, amount others, must be overcome. To deal with the effluent in these SSIs the concept of Common Effluent Treatment plan ( CETP) was introduced with a hope that not only it would help the industries in pollution abatement but also as a step towards the clean environment.

Accordingly the ministry of Environment and Forests instructed various state pollution control Boards, to examine the possibilities of establishing CETPs in various industrial estates in the respective states. Even central assistance upto 25 percent of the total cost of the CETP is being provided as a grant to the common effluent treatment plant on the condition that the State Governments would give a matching contribution. The remaining cost have to be met by equity contribution by the industries and the loans from financial institutions.

*Keywords:*Small and Medium Scale Industries (SMIs),Common Effluent Treatment Plants (CETP),
Small Scale Industries (SSIs),High Rate Transpiration (HRT)

## I. INTRODUCTION

The concept of CETP which was hyped as a solution to manage water pollution has failed because of the heterogeneous nature of the effluent from different industries. It has only compounded the toxic content to larger volumes. And also with the changing nature of effluent many toxic substances like organ chlorines polychlorinated biphenyls (PCBs) and heavy metals have found their way into the waste stream. The various standards formulated for inlet and outlet effluent has no mention of the toxic chemicals and other volatile fugitives. The management of Persistent Organic Pollutants ( (POPs) and inorganic residues in fluid form goes beyond the capacity of primary and secondary treatment in CETPs. Reverse Osmosis, Granulated Activated Carbon, Ultra filtration, ion exchange and other tertiary treatment methods which could be effective in this case are not used by CETPs mainly for economic reasons. This concept also faced many operational and institutional problems as many participating industries started withdrawing from the scheme. With the growing pace of industrialization these CETPs are unable to cater to the need of the industrial clusters which has resulted in by passing the treatment and directly discharging the untreated effluent in water bodies. The sludge which get settled in aeration tanks having concentrated amounts of heavy metals and oregano chlorines, is disposed openly as in the case of both Vapi and Kanpur CETPs.

## II What is a CETP?

Common Effluent treatment plant is the concept of treating effluents by means of a collective effort mainly for a cluster of small scale industrial units. This concept is similar to the concept of Municipal Corporation treating sewage of all the individual houses. The main objective of CETP is to reduce the treatment cost for individual units while protecting the environment.

## III Status of CETP's in India

Provision of effluent treatment plants for individual industries especially in the small scale sector in the various industrial estates in India to produce the effluent of desired quality before discharging the effluent is not feasible in the Indian context. Firstly, it is expensive on both the capital and operating cost front and secondly, there is no guarantee of performance by the individual industries. Further the disposal of treated effluents is also problematic as every individual industry cannot reach the water body through it's own; pipeline nor can it purchase land for inland irrigation. Thus, Government of India floated the idea of Common effluent treatment plant to overcome these problems. Accordingly Ministry of Environment and Forest, Government of India instructed the various State pollution control boards to examine the possibilities of establishing CETP's in various industrial estates. In response to the directive issued by the Central government, the State governments started identifying the various locations for CETP's. Work carried out in this context till 1990 was very limited. Till 1990 India had only one CETP in jeedimetla near Hyderabad (Andhra Pradesh) and here effluent was collected by tankers.

**Table No. 1.1**

| o. | Name of the State/UT | **Government subsidy** | No. of CETP's |
|---|---|---|---|
| 1 | Andhra Pradesh | 132 | 3 |
| 2 | Delhi | 2300 | 15 |
| 3 | Gujarat | 735.42 | 7 |
| 4 | Himachal Pradesh | 12.6 | 4 |
| 5 | Haryana | 11.89 | 1 |
| 6 | Karnataka | 98.84 | 3 |
| 7 | Madhya Pradesh | 96 | 3 |
| 8 | Maharastra | 287.435 | 8 |
| 9 | Punjab | 19.95 | 4 |
| 10 | Rajasthan | 100 | 2 |
| 11 | Tamil Nadu | 1934.08 | 36 |
| 12 | Uttar pradesh | 95.75 | 2 |
| | **TOTAL :-** | **5803.89** | **88** |

***Source : Ministry of Environment and Forests***

## IV Treated effluents discharge standards

Waste water treatment processes differ in reducing the concentration of parameters of concern such as BOD or Suspended solids etc. and the standards of discharge determine whether a given combination of treatment processes provide an acceptable level of treatment. Thus before designing a CETP effluent discharge standards should be identified. Standards may vary depending on the point of discharge of treated wastewater. For example sewer standards irrigation standards drinking water standards are different.

**Table 1.2 Out let CETP ( sewer standards ) norms**

| | |
|---|---|
| pH | 6.5-8.5 |
| BOD | less than 350 mg/lit |
| TSS | 200 mg/lit |
| COD | 700 - 1200 mg/lit |
| O & G | less than 20 mg/lit |

**V Sequencing of treatment units at CETPs**

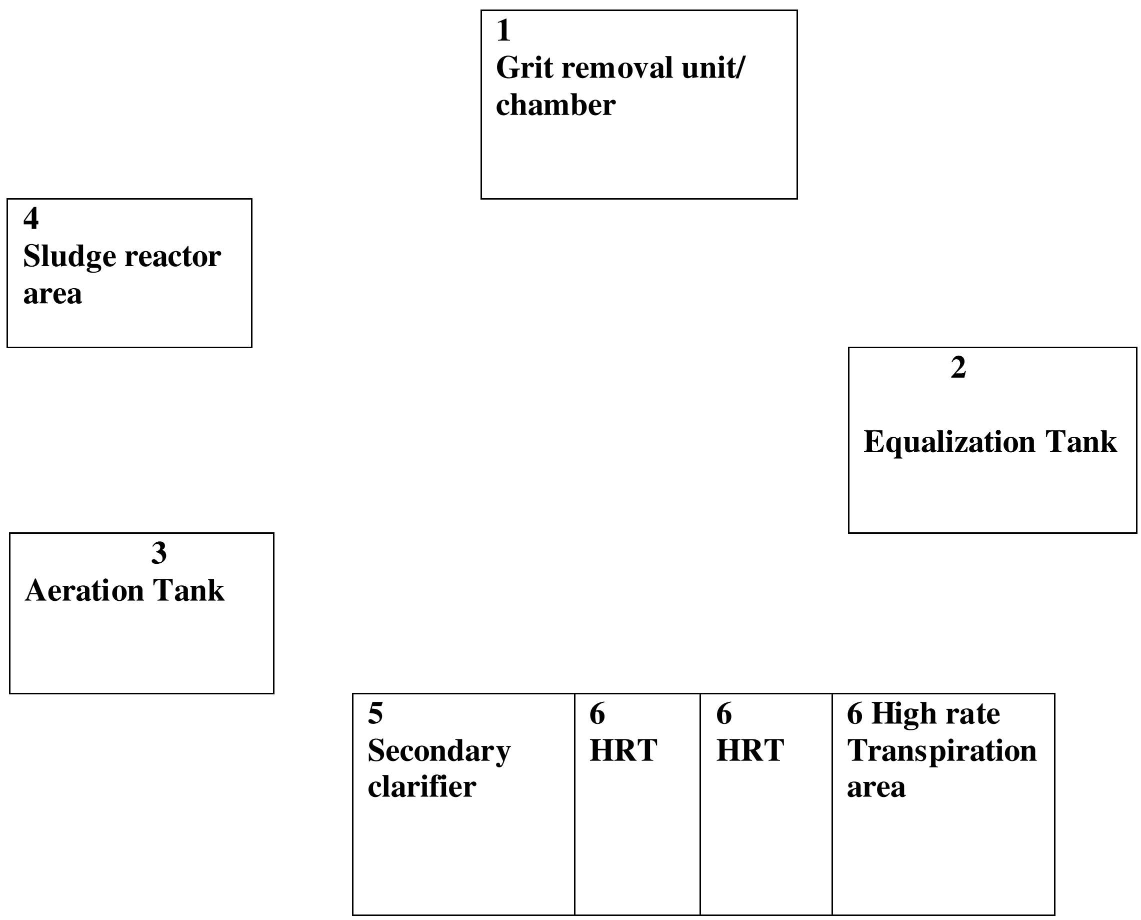


**Figure :Treatment plant for effluent at common point or CETP**

**Table 1.3 effluent quality standards for CETP**

| Parameter | Concentration |
|---|---|
| 1. PH | 5.5- 9.0 |
| 2. Temperature C | 45 |
| 3. Oil & Grease | 20 |
| 4. Phenolic compounds | 5.0 |
| 5 Ammonical Nitrogen (as N) | 50 |
| 6 Cyanide (as CN) | 2.0 |
| 7 Hexavalent chromium | 2.0 |
| 8 Total chromium | 2.0 |
| 9 Copper | 3.0 |
| 10 Lead | 1.0 |
| 11 Nickel | 3.0 |
| 12 Zinc | 15.0 |
| 13 Arsenic | 0.2 |
| 14 Mercury | 0.01 |
| 15 Cadmium | 1.0 |
| 16 selenium | 0.05 |
| 17 Fluoride | 15.0 |
| 18 Boron | 2.0 |
| 19 Alfa emitters Hc/ml | $10^{-7}$ |
| 20 Beta emitters Hc/ml | $10^{-8}$ |

**VIACKNOWLEDGEMENT**

Authors are thankful to Green field common effluent treatment plants ,Solapur

## VIICONCLUSION

The Concept of CETPs for small scale industries is emerging in India due to large investment involved constructing and operating the individual effluent treatment plants (ETP)
waste treatment before its disposal into inland water bodies or as on land irrigation
Secondly water is a precious commodity and therefore must be conserved in view of this it is necessary.

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