

Common Effluent treatment Plants (CETP)

CETP

- The concept of common effluent treatment plant has been accepted as a solution for collecting, conveying, treating, and disposing of the effluents from the industrial estates.
- The effluent include industrial wastewaters and domestic sewage generated from the estate.
- This CETP concept helps small and medium scale industries to dispose of their effluents. Otherwise it may not be economical for these industries to treat their wastewaters or there may be space constraints.
- Some of these industries may require to give preliminary treatment (for removal of solids) so that the receiving sewers can be maintained free flowing.
- It may be required to correct pH or removal of specific pollutant before the industry discharges in CETP.

CETP

- CETP is designed on the basis of:
 - Quality and flow rate of the wastewater.
 - Effluent standard required by CETP.
 - Possibility of recycle and reuse of treated wastewater.
 - Availability of land, manpower, energy and expertise in specific treatment methods.
 - Willingness of the industries located in the industrial estate to contribute towards the capital and operating expenses of CETP.

CETP

- A CETP can be changed to **combined effluent treatment plant** when it collects sewage from surrounding localities and treat it with industrial wastewaters.
- The advantages of such systems are:
 - Dilution to toxic constituents and dissolved inorganic solids from the industrial wastewaters.
 - Better control over the process due to continuous seeding of microorganisms from sewage.
 - Sewage provides sufficient nutrients (N, P).
 - It may reduce operating cost in the form of adding chemicals.

CETP

- CETPs are classified in two categories
 - (i) **Homogenous** : Industries producing similar goods in that industrial area are contributing. E.g., tanneries, paper, etc.
 - (ii) **Heterogenous** : industries producing widely divergent goods are placed together. E.g., chemical, dairy, soft drink, canneries, pharmaceuticals, etc.
- Designing the treatment plant for the former is easier than the later due to difficulty in estimating characteristics of the combined wastewater.

CETP

- Advantages of providing CETP
 - Small and medium scale industries are not required to treat their wastewater separately.
 - Assured wastewater treatment hence better control over pollution.
 - Concerned pollution control agency have to monitor only one treatment plant for its performance.
 - Participating industries have commitment to generate wastewaters acceptable to CETP.
 - Industries are responsible for finding ways to minimize pollution load and reduce water consumption to the extent possible.

Ownership of CETP

- **Private sector ownership**
 - Individual industries form a co-operative company and become shareholder.
- **Advantages of this form:**
 - Commitment to pollution control by the industries.
 - Short term problems of the manpower and equipment can be solved by participating industries.
- **Drawbacks**
 - There could be conflict among the industries about the wastewater quality and quantity on which the cost of treatment depends.
 - Failure of pay may result in not allowing this industry to discharge wastewater.

Ownership of CETP

- **Public sector ownership**

- State industrial development corporation provides all infrastructural facilities including CETP.
 - Conflict of interest in regard to compliance and strict enforcement may be difficult being Govt. agency.

- **Joint Private and Public Sector Ownership**

- A company is formed by the state agency and industrial association.
- This improves availability of funds, but problem in defining responsibilities and delay in execution.

Technical Aspects

- This include:
- **Basic information:** about individual unit, their raw materials, products, treatment if any, quality and quantity of wastewater generation, scope for waste minimization.
- **Collection and conveyance:** transportation is done either through underground piped system or through trucks for small quantities.
- **Pretreatment:** Rational pretreatment is to be given by individual units irrespective of mode of transport.
- **Planning:** Master plan and phase wise approach if uncertainty exists about quantity, quality and treatability.
- **Disposal:** Handling, treatment and disposal of the sludge generated from CETP.
- Recycle and reuse of treated **effluent or disposal.**

Financial aspects

- Unit cost of treatment is more if the wastewater quantity is less.
- Heterogeneous industries will produce wastewater with varying quality and hence it may become costlier to treat them than the group consisting of homogenous industries.
- Conveyance of wastewater may require large capital investment, hence detailed techno-economical feasibility study is necessary.
- Optimal pretreatment at individual industry is necessary.
- Converting common effluent treatment plant to combined effluent treatment plant will be advantageous.
- Provision for upgradation should be made in design. Modular approach for ETP design shall be considered to upgrade the performance of the treatment plant as per the future needs.