

Effluent Treatment Plant (ETP)

1. Introduction

Effluent treatment plant cleans industrial effluents, Laboratory waste water, contaminated water from rivers and lakes, and so on just in order to reuse the water for additional purposes. Along such lines, water is reutilized and sustained. In fact, such gushing treatment ensures that any contaminant will be expelled from the water making it reusable. It is mostly used in industries such as pharmaceuticals, textiles, tanneries, and chemicals where there is a chance of extreme water contamination. Nevertheless, how this treatment will be applied may vary from industry to industry. Such treatment plant ensures that the contaminated and polluted water from industries get treated and become reusable before being released back to nature. Without this treatment, it won't be possible for humans to get clean usable water for household chores.

2. Aim: Use of Effluent Treatment Plant for Laboratory waste water.

3. Objectives: - Effluent Treatment Plant (ETP) is a type of waste water treatment method which is particularly designed to purify laboratory waste water .The aim of ETP aim is to release safe water to environment from the harmful effect caused by the effluents.

Laboratory effluents contain various materials, depending on the experiments performed in laboratory. Some effluents contain oils and grease, and some contain toxic materials (e.g., cyanide), organic pollutants. Since laboratory waste water contains a diversity of impurities and therefore specific treatment technology called ETP is required.

The ETP Plant works at various levels and involves various physical, chemical and biological to treat waste water from different industrial sectors like chemicals, drugs, pharmaceutical, refineries, dairy, ready mix plants & textile etc.

Objectives of Waste water Treatment:

1. To improve quality of wastewater.
2. Elimination of pollutants, toxicants.
3. Preservation of water quality of natural water resources.
4. To make wastewater usable for other purposes.
5. Prevention of harmful diseases.
6. To reduce the treatment cost for individual units while protecting the environment.

4. **Context:** - Effluent Treatment Plants (ETPs) are used by leading companies in the pharmaceutical and chemical industries to purify water and remove any toxic and non toxic materials or chemicals from it. These plants are used by all companies for environment protection. An ETP is a plant where the treatment of industrial effluents and waste waters is done. The ETP plants are used widely in industrial sector, for example, pharmaceutical industry, to remove the effluents from the bulk drugs.

During the manufacturing process of drugs, varied effluents and contaminants are produced. The effluent treatment plants are used in the removal of high amount of organics, debris, dirt, grit, pollution, toxic, non toxic materials, polymers etc. from drugs and other medicated stuff. The ETP plants use evaporation and drying methods, and other auxiliary techniques such as centrifuging, filtration, incineration for chemical processing and

effluent treatment. In the Lab. Effluent ETP is used to neutralize the P^H , remove oily material, toxic chemicals and dirt material.

5. Methods of Waste water Treatment:

Wastewater treatment technologies or advanced waste water treatment methods can be broadly classified into three sub divisions and are as follows:

- 1. Physical treatment method:** It involves removal of pollutants/contaminants by physical forces.
- 2. Chemical treatment method:** Removal of impurities or toxic wastes through chemical reactions.
- 3. Biological treatment method:** Ejection of pollutants by biological activities.

6. The practice: -

The Department of Chemistry takes up the initiative to set up an effluent treatment plant for laboratory waste water in 2018.

7. Procedure: -

All laboratory waste water is collected in tank having capacity 10000 liter. Start motor 1/2, fill effluent plant tank then add 500 gm alum to maintain $pH = 10$, stir it for 10 to 15 min. Then add lime 250 gm and maintain $pH=7$ and stir for 10 to 15 min. Add polymer compound by preparing denser solution 100gm and then stir for 5 to 10 min. Check $pH = 7$ wait for 30 min drain out liquid in filter tank (white tank). Start motor 3/4, on filter knob check position. Keep on wash back for 5 min and keep on rinse for 5 min. Finally Keep on filter- 1 Start /Stop motor each of the above a,b,c. Start motor 3/4 kept on filter -1 knob and then collect pure $pH=7$ water from outlet is given to plant. Sludge bottom of effluent tank is removing by the knob kept outside cement tank. One cycle was completed in 120 min.

In each extraction process about 1000 liter pure water is obtained.

- **Influent:** Untreated industrial waste water.
- **Effluent:** Treated industrial waste water.
- **Sludge:** Solid part separated from waste water by ETP.

8. Evidences of success:

The outcome of the practice is that laboratory waste water is purified and it is reused for different purposes .The benefit shared by the local. This can provide the Chemistry students and staff much encouragement as a lot of requests for continuing the practice can come up from the local people. It helps to reduce soil and water pollution due to toxic chemical .This is ecofriendly practice which follows green chemistry approach. We supply purified water to the medicinal plant garden.

9. Problem encountered and resources required:

The problem of lack of technical assistance and trained personnel. The lack of space as the centralized facility can be planned in advance to ensure that adequate space is available. The problems of monitoring for the pollution control boards. To organize the disposal of treated wastes and sludge and to improve the recycling and reuse possibilities as once individual units are required to pay for waste treatment/disposal, they tend to adopt means to reduce waste generation. Chemicals are costly and require continuous power supply.

Chemistry department staff and students shows active involvement in this project.

10. Applications of ETP?

ETP plays an important role in treating industrial wastewater as well as sewages generated from households. Packaged effluent treatment plants help both small- and medium-sized industries by disposing of the effluents generated at their facilities.

Otherwise, it would be difficult for them to properly treat wastewater. They might also need to have extra space for contaminated water treatment. However, they may need to treat the water for the purpose of solid evacuation to ensure that the sewer can flow freely. Also, expulsion of some toxins is necessary prior to release the wastewater in ETPs.

- **Results in clean reusable water** — ETPs manufactured by any leading packaged ETP manufacturer ensure safe and clean water. Before the inception of this amazing treatment plant, people were hardly aware that polluted and impure water can be reused. The treatment method followed by ETPs includes the elimination of toxin from the water in order to generate safe and clean water.

- **Saves you money** — It also ensures complying with industry standards and regulations.

- **Saves our planet** — ETPs remove any unsafe chemical from water in order to treat it and make it ready for reuse. So when this treated water will enter the ground, it will leave no negative effect on the planet. ETPs are bliss for the industry owners.

- **Saves water** — By using an ETP, you can save water. The plant recycles old contaminated water ensuring less water wastage and that is certainly good for the earth. If you are concerned about the carbon footprint your business might leave, ETPs are the best way to serve Mother Nature in a better way.

ETP helps to purify wastewater generated from households as well as industry. The treatment process results in reusable clean water, saves your money as well as water and our planet.

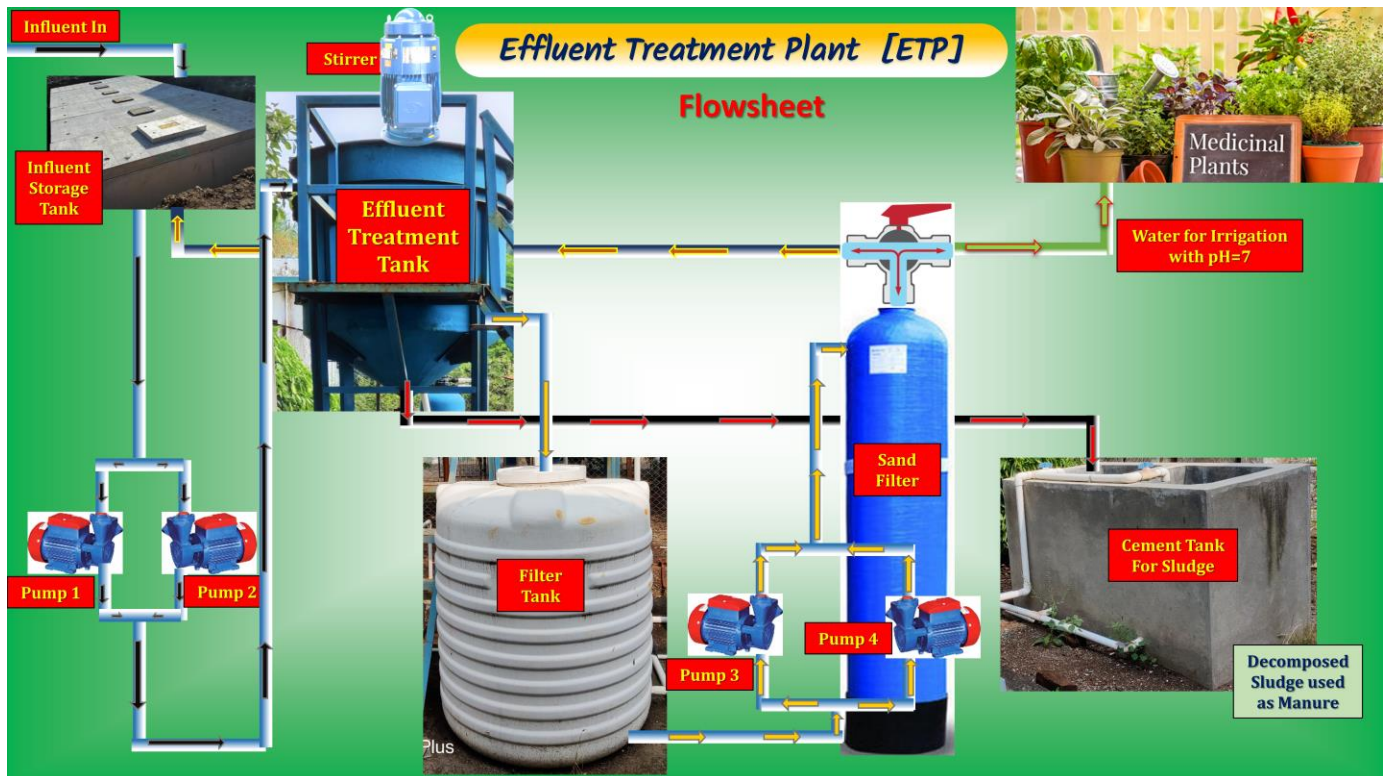
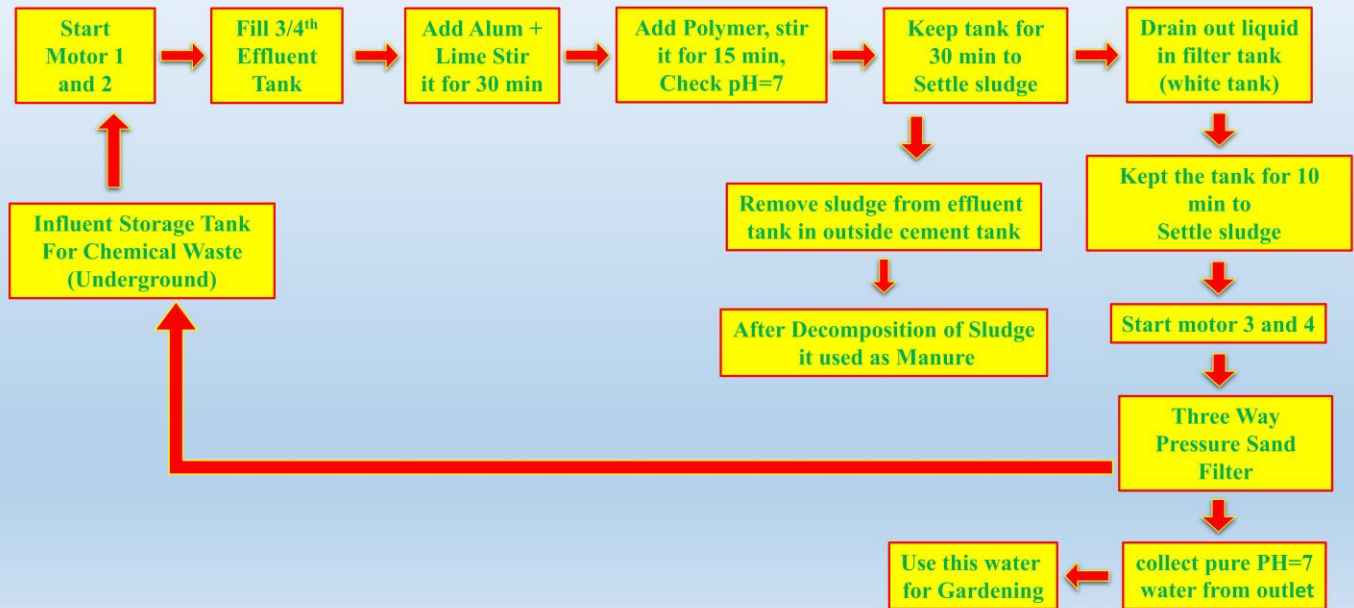
Standard Operating Procedure

- 1) Start Motor 1/2, Fill Effluent Plant Tank.
- 2) Add (500gm) alum to maintain pH = 10 and then stir it for 10 to 15 min.
- 3) Then add lime (250 gm) and maintain pH=7 and then stir for 10 to 15 min
- 4) Add polymer compound by preparing denser solution (100gm) and then stir for 5 to 10 min.
- 5) Check pH =7.Keep it Stand for 30 Min
- 7) Drain out liquid in filter tank (white tank).
- 8) Start motor 3/4.
- 9) On filter check knob position.
 - a) Kept on wash back for 5 min.
 - b) Kept on rinse for 5 min.
 - c) Kept on filter- 1 (Start /Stop motor each of the above a, b, c).
- 10) Start motor 3/4 kept on filter -1 knob and then collect pure $P^H=7$ water from outlet.
- 11) Sludge bottom of effluent tank is removing by the knob kept outside cement tank.

(One cycle was completed in 120 min.)

Effluent Treatment Plant [ETP]

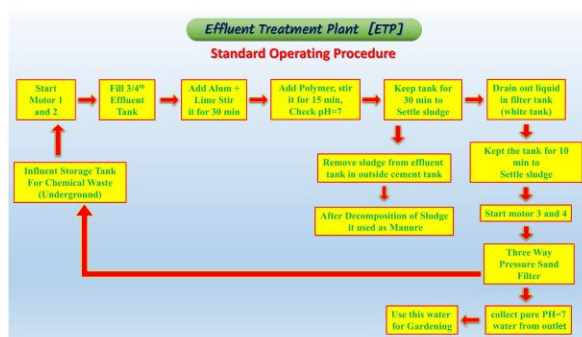
Standard Operating Procedure



Templet

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Department of Chemistry ETP-Effluent Treatment Plant



Introduction

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Applications of ETP

1. Food and processing industries
2. Pharmaceutical industry
3. Textile and Paper industries
4. Automobile industries
5. Textile and dye industry
6. Dairy and Beverage industries

Problem encountered and resources required

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Objectives

1. To improve quality of waste water.
2. To eliminate the pollutants and toxicants from the waste water.
3. To preserve the water quality of natural water resources.
4. To make wastewater usable for other purposes.
5. To prevent the harmful diseases.
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