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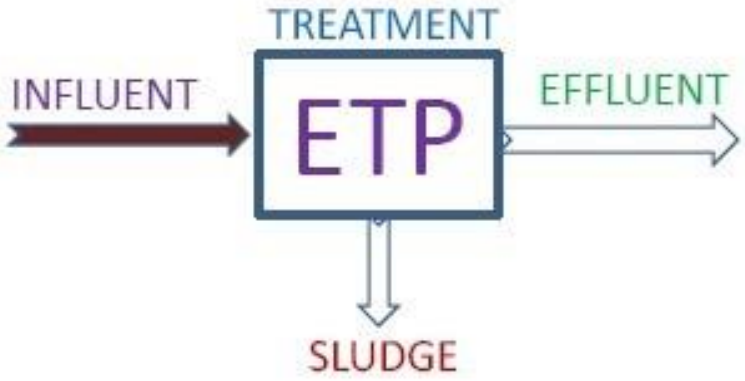
What is an ETP?

- **ETP** (**E**ffluent **T**reatment **P**lant) is a process design for treating the industrial waste water for its reuse or safe disposal to the environment.
- **Influent: Untreated** industrial waste water.
- **Effluent: Treated** industrial waste water.
- **Sludge: Solid part** separated from waste water by ETP.



Need of ETP

- To **clean industry effluent** and recycle it for further use.
- To **reduce the usage of fresh/potable** water in Industries.
- To **cut expenditure** on water procurement.
- To **meet the Standards** for emission or discharge of environmental pollutants from various Industries set by the Government and **avoid hefty penalties**.
- To **safeguard environment** against pollution and contribute in sustainable development.

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Design of ETP

The design and size of the ETP depends upon:

- Quantity and quality of the industries discharge effluent.
- Land availability.
- Monetary considerations for construction, operation & maintenance.
- **Area dimension depends on:**
  - Quality of wastewater to be treated,
  - Flow rate
  - Type of biological treatment to be used .
- **In case of less available land,** CETP (Common Effluent Treatment Plant) is preferred over ETP

Roles of the Treatment Plant Operator

- Planning, design and construction of new facilities
- Administration
- Public Relations
- Operation and Maintenance
- Safety
- Continuing Education

Planning, design and construction

- Offer input about the design and how the plant should be operated efficiently.
- Offer important information regarding the limitations of the current facility.
- Offer input on issues such as maintainability, security, operability, and safety.

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- During construction, the Treatment Plant Operator should become familiar with the plant

Administration

- Supervision
  Scheduling and supervision activities of other operators, mechanics, and laborers.
- Record Keeping
  Maintaining accurate records.
- Financial Administration
  Identify and manage plant needs, including equipment and personnel.
- Create and manage an operating budget.

Operation and Maintenance

- Process Control Decisions
  –Any action to maintain or change quality/quantity of water being treated
- Laboratory Procedures
  –Process control depends on reliable laboratory data.
- Mechanical Principles
  –Should have a general knowledge of pumps, hydraulics, electric motors, and circuitry.

Public Relations

- Plant Tours
  - Appearance is important.
  - Annual “open house”
- Downstream User Interests
- Treatment plants protect water for downstream users, so establish role as protector, not polluter.

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Safety

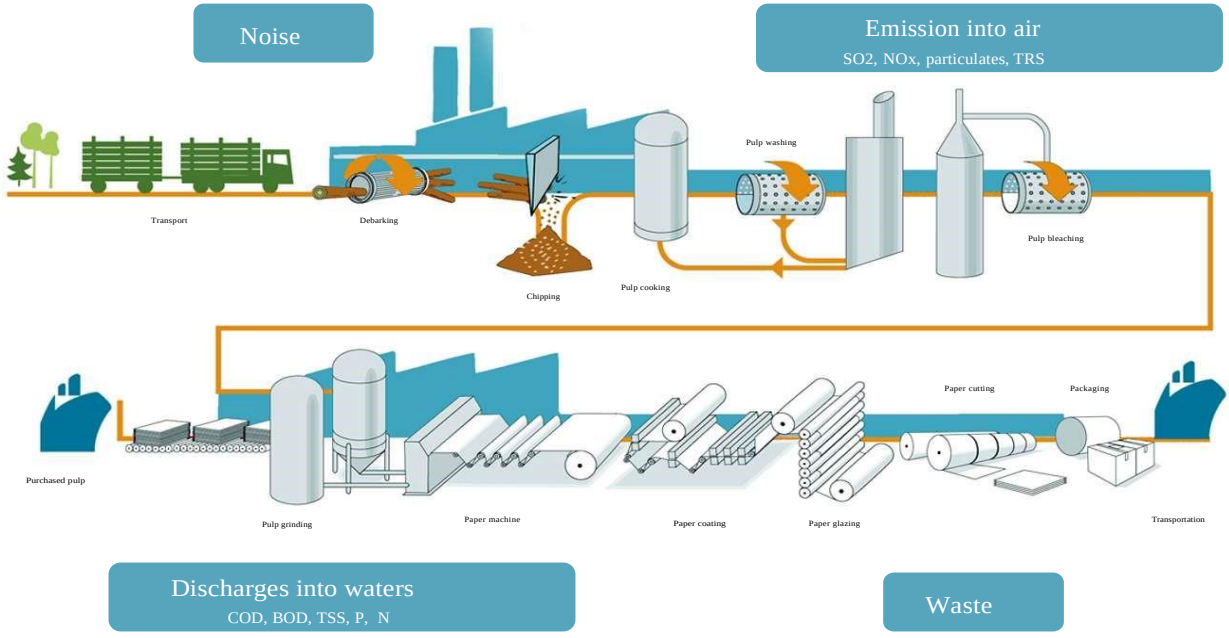
What types of safety issues might there be at a sewage treatment plant?

1. Open water tanks
2. Disease (proper hygiene)
3. Icing of walkways
4. Chemical use
5. Electrical contact

Continuing Education

- Keep up with new technology
- Maintain sufficient operation stages to maintain license
- Learn advanced concepts like troubleshooting

Environmental impacts from production



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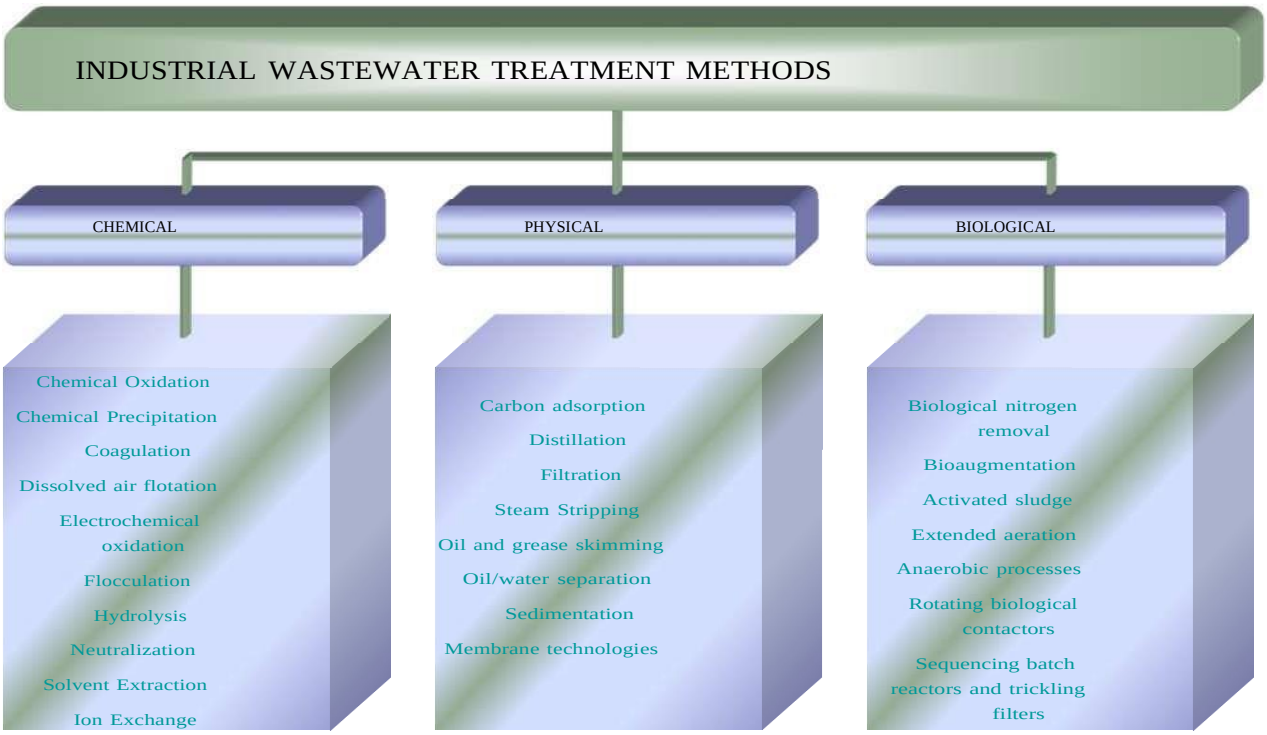
EPA's program to control wastes is based on the following hierarchy:

Avoidance Re-use
Re-cycling
Recovery of energy
Treatment
Containment
Disposal

The treating of wastewaters can take place at different points in the process.

Classification of Wastewater Treatment Methods



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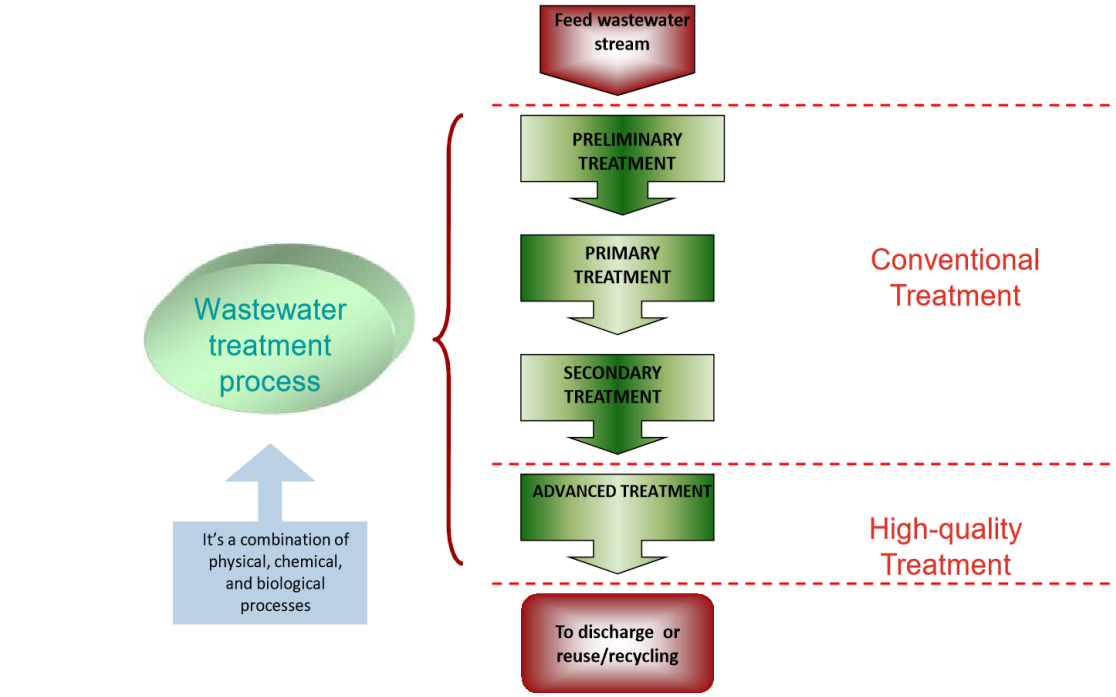
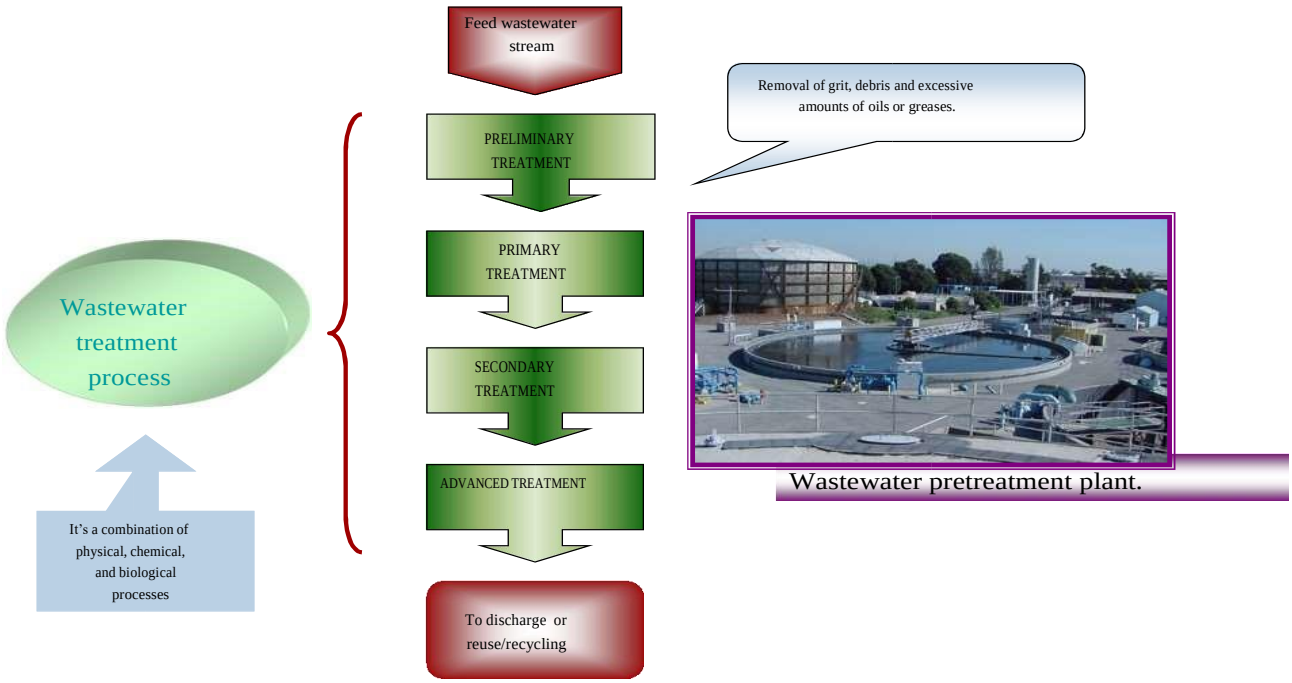
Wastewater treatment process





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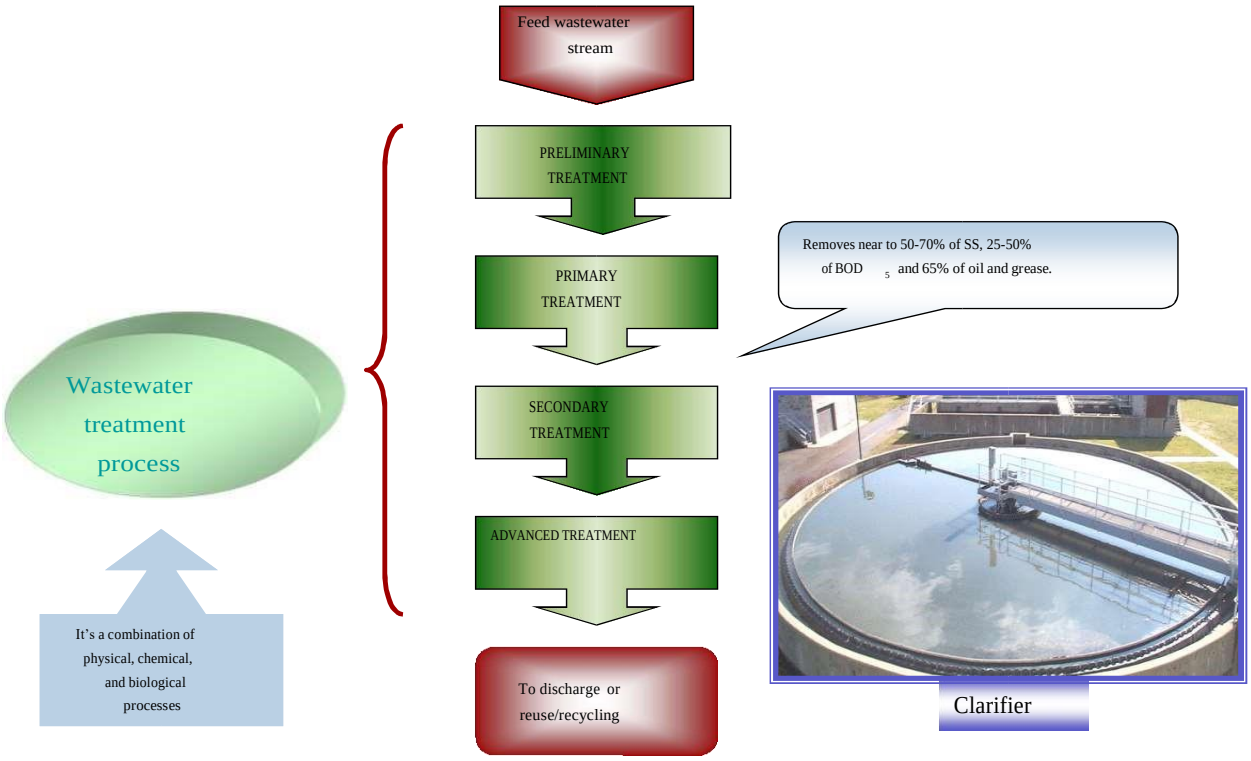

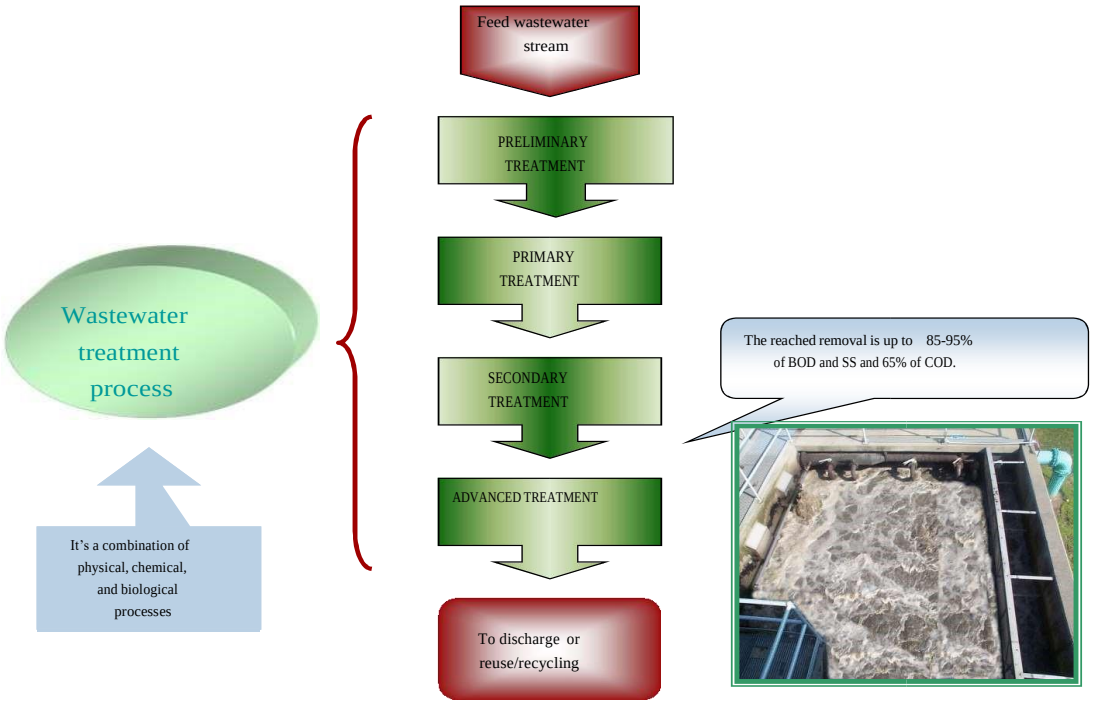

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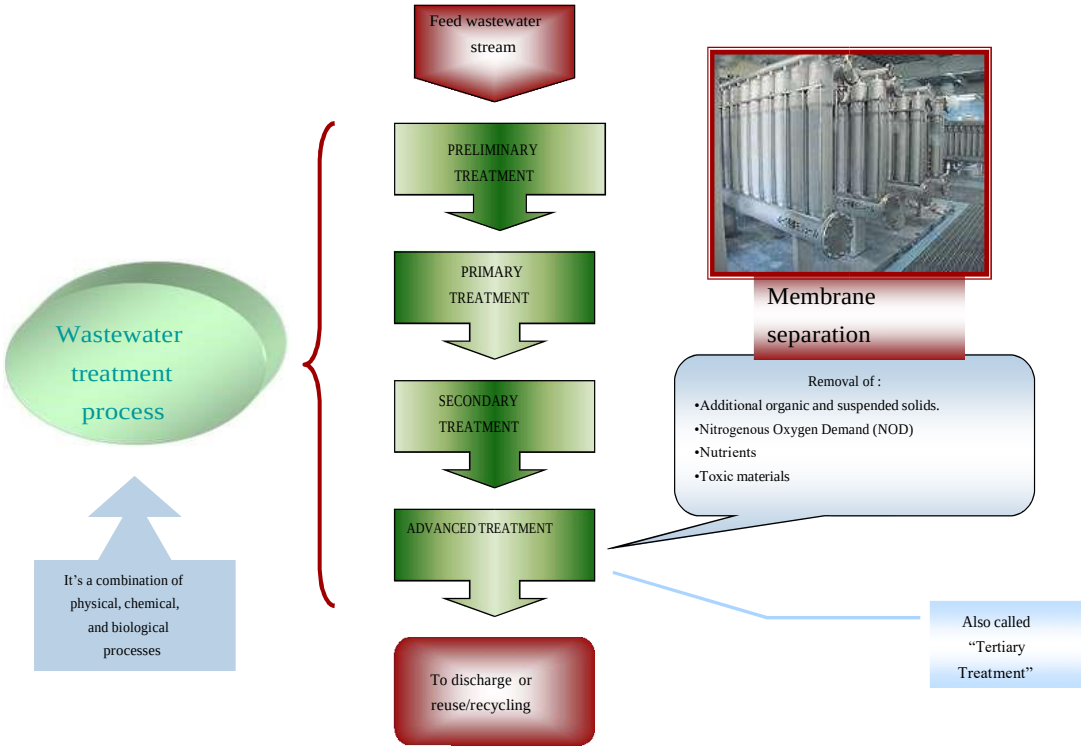

Typical steps in modern wastewater treatment