

WTP & ETP CHEMICALS

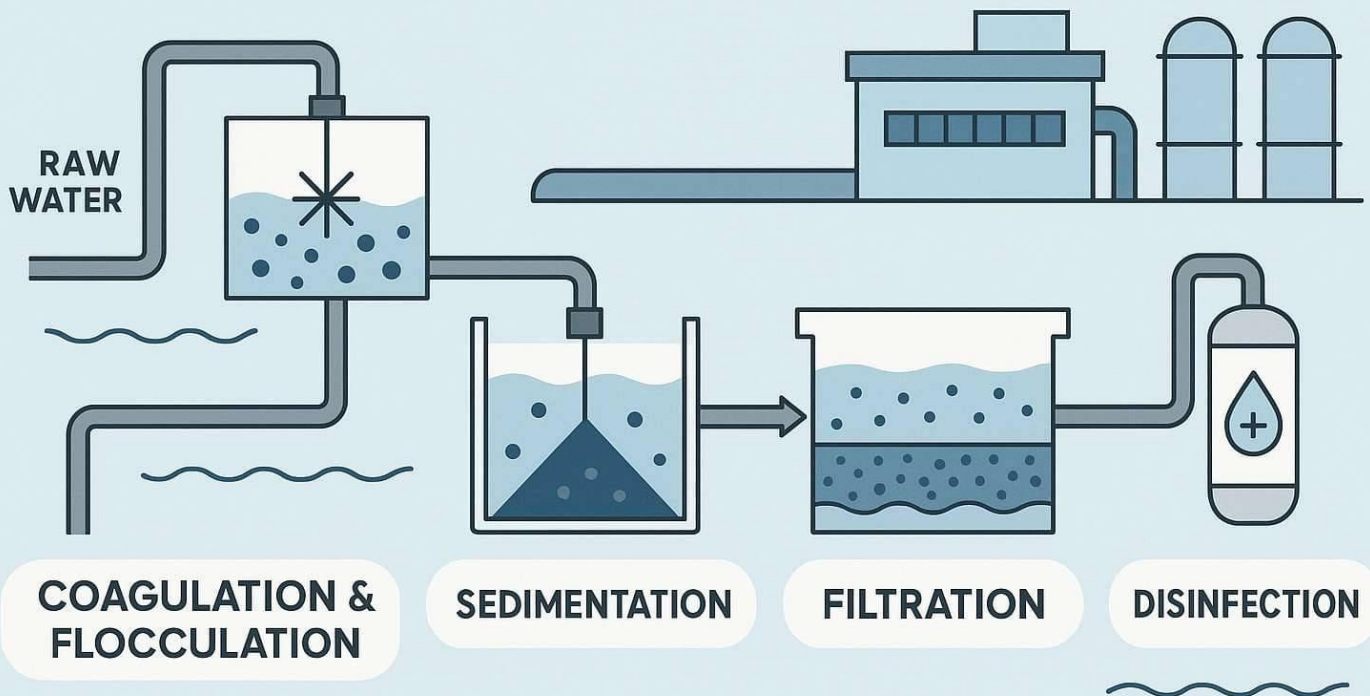
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WATER TREATMENT PLANT PROCESS



Chemicals are used in water treatment plants to make water safe, clear, and drinkable.

Raw water contains invisible bacteria, suspended dirt, and dissolved minerals that natural filtering cannot remove alone.

Why chemicals are necessary during the treatment process.

1. Clump Dirt Together (Coagulation & Flocculation)

Raw water contains tiny, suspended particles of dirt and clay. These particles are too light to sink and pass right through standard filters.

Aluminum sulfate (alum) or ferric chloride.

These chemicals act like magnets. They neutralize the electrical charge of the dirt particles, causing them to stick together into larger clumps called "floc." These heavy clumps easily sink to the bottom of settling tanks.

2. Kill Harmful Pathogens (Disinfection)

Surface water is full of microscopic organisms. Bacteria, viruses, and parasites can cause severe waterborne diseases like cholera or typhoid.

Chlorine, chloramines, or chlorine dioxide.

These powerful disinfectants destroy the cellular structure of pathogens. Chlorine is especially crucial because a small amount stays in the water to keep it germ-free as it travels through miles of pipes to your tap.

3.Adjust pH Levels (Corrosion Control)

If water is too acidic, it will corrode and eat away at metal water pipes. This leaches toxic metals like lead and copper into drinking water. If water is too alkaline, it leaves scale deposits that clog pipes.

Lime (calcium hydroxide), soda ash (sodium carbonate), or sodium hydroxide.

Operators add these chemicals to balance the pH of the water. This protects public health and extends the lifespan of the city's pipe infrastructure.

4.Remove Taste, Odour, and Toxins (Adsorption)

Decaying algae and organic matter give water an unpleasant earthy taste and smell. They can also introduce dangerous algal toxins.

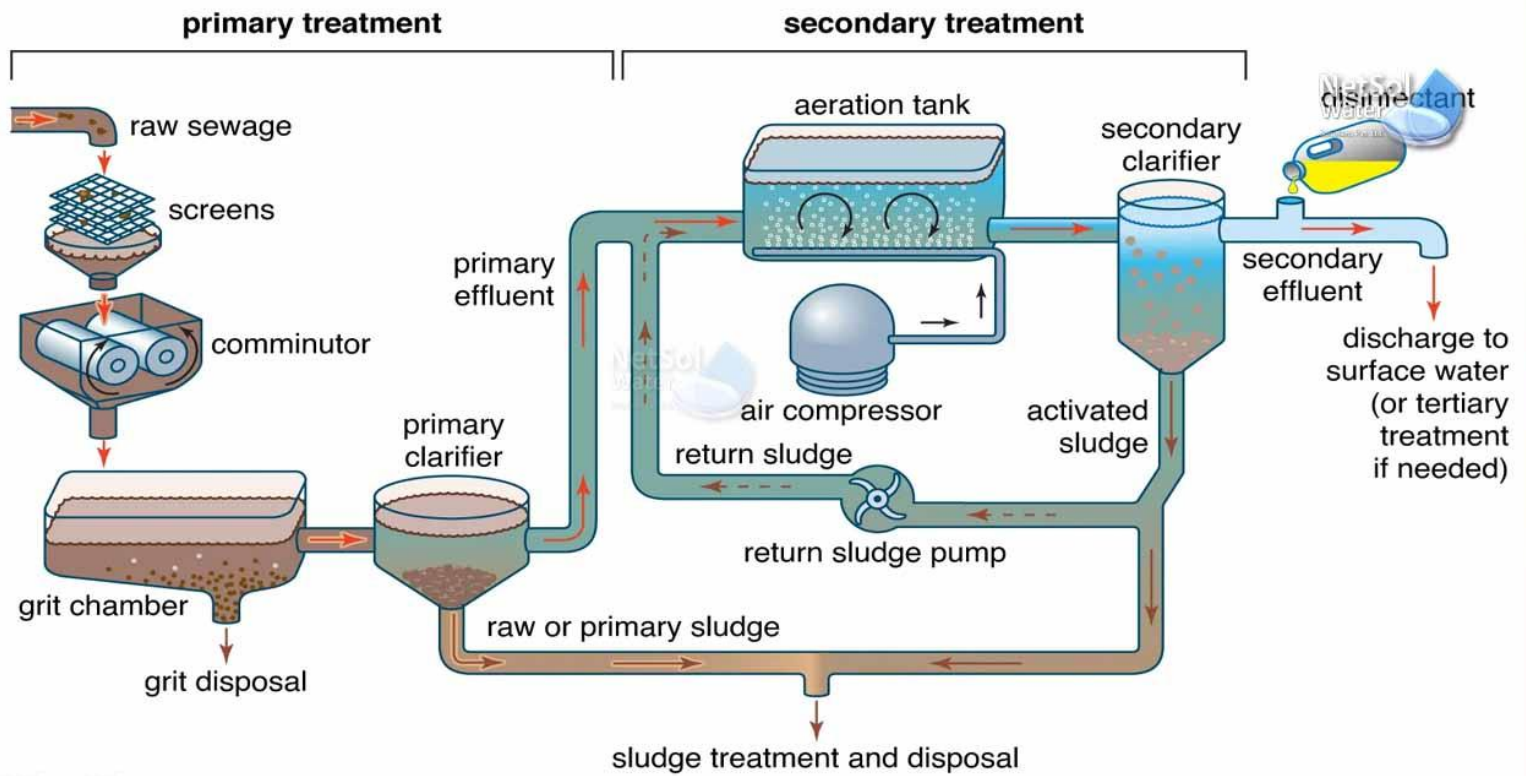
Activated carbon (powdered or granular) or potassium permanganate

These materials have highly porous surfaces. They act like chemical sponges, trapping and locking away the specific compounds causing the bad smells and tastes.

5.Prevent Tooth Decay (Fluoridation)

Natural water sources rarely contain enough fluoride to protect dental health.

Fluorosilicic acid or sodium fluoride.



Stages of Industrial Effluent Treatment Plant

Effluent Treatment Plant (ETP) is an industrial wastewater treatment facility designed to purify highly toxic chemical waste, heavy metals, and organic pollutants generated during manufacturing processes before releasing them safely into the environment or recycling them back into production.

Chemicals are used in an Effluent Treatment Plant (ETP) to physically and chemically alter industrial wastewater. They neutralize acids/alkalies, bind microscopic suspended solids into larger clumps (flocs) so they can settle out, eliminate toxic heavy metals, and disinfect final effluents to kill harmful pathogens.

The specific types of chemicals and their functions in the ETP plant.

pH Neutralizers: Chemicals like **Caustic Soda (NaOH)** and **Lime** raise pH, while **Sulfuric Acid** lowers it. Proper pH is necessary for biological treatment stages and protects plant equipment from corrosion.

Coagulants: Chemicals such as Alum (Aluminum Sulphate) or Ferric Chloride are added to destabilize microscopic, suspended dirt particles in the water so they can begin to clump together.

Flocculants: Polyelectrolytes are added after coagulants to bind the newly formed clumps into much larger, heavier aggregates called "flocs". These heavy flocs quickly settle to the bottom as sludge, clearing the water.

Oxidizing Agents: Chemicals like **Hydrogen Peroxide (H_2O_2)** are used to break down stubborn, non-biodegradable pollutants and eliminate foul odors.

Disinfectants Chlorine or Ozone is used in the final (tertiary) treatment stage to destroy harmful bacteria and pathogens before the water is safely discharged or reused.

Could you tell me what type of industry your ETP serves (e.g., textile, pharmaceutical, food, chemical) and what specific problem you are trying to solve (like high turbidity, foul odor, or improper pH)? This will help narrow down the exact chemicals and dosing steps required.