

3- Membrane Processes

In water treatment, membrane processes are generally used for demineralization. The two most common processes, reverse osmosis and electro dialysis, use microporous membranes to concentrate and separate the unwanted minerals from the influent.

4- Reverse Osmosis

In reverse osmosis (often abbreviated to RIO, and also called ultrafiltration), external pressure applied to the semipermeable membrane offsets the hydrostatic pressure, resulting in pure water on one side of the membrane and the unwanted mineral content concentrated on the other. While perhaps the most common use for reverse osmosis is to reduce salinity in brackish ground waters, reverse osmosis is used to remove aesthetic contaminants that cause taste, odor, and color problems.

It can also remove unwanted off-tastes caused by chlorides or sulfates, and is also used to treat for arsenic, asbestos, atrazine, fluoride, lead, mercury, nitrate, and radium. When paired with carbon prefiltering, reverse osmosis processes are used to remove volatile contaminants that include benzene, trichloroethylene, trihalomethanes, and radon. Reverse osmosis equipment performance is affected by water quality parameters. Membranes are damaged by water constituents that include suspended solids, dissolved organics, hydrogen sulfide, iron, and strong oxidizing agents (chlorine, ozone, and permanganate).