Wastewater Brief

Modern wastewater treatment is based on nature's process of cleaning water where naturally occurring organisms, supported by oxygen, feed on organic materials. Cities today could not exist without sanitary sewers and wastewater treatment.

The Sanitary Sewer

Louis Pasteur (1822-1895) discovered germs were a main cause of disease and could be killed by heat and antiseptics. Joseph Lister (1827-1912) used that new knowledge successfully to prevent surgical infections. He developed the practice of "antisepsis" – sterilizing operating rooms and instruments, surgical masks, gloves, gowns and caps for doctors and nurses.

The sanitary sewer system is an extension of Pasteur's and Lister's discoveries. In countries with modern wastewater treatment systems, like the United States, water-borne diseases have been virtually eliminated. Countries without sophisticated sewer systems are vulnerable to epidemics of typhoid, cholera, hepatitis, polio and dysentery.

The Wastewater Treatment Process at Reclamation Plants

- **Primary Treatment.** Heavy particles and floatable materials are removed in settling tanks, leaving mostly dissolved organic materials in the water.
- **Secondary Treatment.** Naturally occurring microorganisms are cultivated in a very concentrated form to feed on the organic materials and are then removed in settling. (Oxygen is added to sup port the microorganisms.)
- **Tertiary Treatment.** Filters remove any remaining suspended materials.
- **Disinfection.** The treated water is then disinfected to produce water virtually free of bacteria and viruses, meeting the same disinfection standards as drinking water.

Joint Water Pollution Control Plant (JWPCP)

The JWPCP uses primary and secondary treatment similar to the first two stages of the water reclamation plants. The JWPCP also has elaborate systems to treat and recycle the solids removed during the treatment at all seven Joint Outfall System facilities.

The treated water is disinfected with chlorine to meet standards protective of ocean quality. The treated water contains more dissolved solids (salts) than water from the inland water reclamation plants so it has a lower priority for reuse. It is pumped through tunnels and discharged into the ocean about one and a half miles from shore through outfall diffusers, producing a dilution of more than 150 parts seawater to 1 part treated water.