ENGINEERING

SPACE-AGE SEWAGE SYSTEM

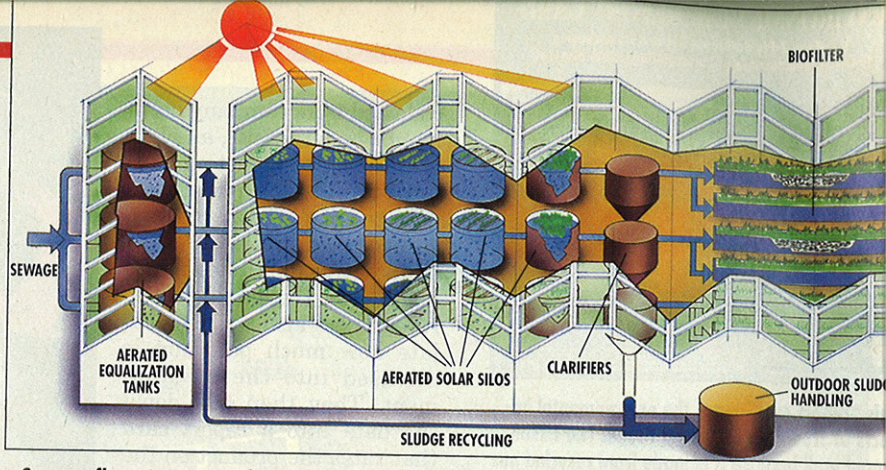
From technology designed for use in space, John Todd of Ocean Arks International in Falmouth, Mass., has developed a down-to-Earth alternative to conventional wastewater treatment. By mimicking pond and marsh processes, his greenhouse-based "living machine" cleanses sewage without intensive energy or chemicals.

According to Todd, Ocean Arks' system removes more contaminants and produces less sludge than conventional methods at competitive costs. The system also produces valuable products such as bait fish, ornamental plants, and potting soil.

To test the technology, the EPA is funding a project in Frederick, Md. A facility designed by Ocean Arks and engineered by Advanced Greenhouse Systems of Burlington, Vt., will treat 20,000 to 40,000 gallons of sewage per day. The sewage, from a 340-inmate prison, will flow through two greenhouses that allow year-round operation. As the sewage passes through tanks and a miniature wetland in the greenhouses, living organisms will remove heavy metals, human pathogens, and other contaminants. "Sludge production is expected to be one-tenth to one-fifth of that generated at conventional plants," Todd claims.

Pilot projects are already being used to treat waste from septic tanks in Harwich, Mass.; municipal sewage in Providence, R.I.; and dairy wastes at the Ben and Jerry's ice cream factory in Waterbury, Vt. Harwich officials are considering constructing a full-scale facility. "What is important about the technology is that it is modular in nature, and additions can be made as needed," says town selectwoman Shirley Gomes.

San Francisco water administrators also hope to test the technology. They say it could be used to reclaim water from municipal sewage for irrigation, fire fighting, toilet flushing, dust control, and soil compaction at construction projects.—*Carol Brighton*



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Sewage flows into aerated tanks inside a small greenhouse, then to a series of solar silos inside a larger greenhouse. The silos contain microorganisms, snails, shellfish, and plants such as hyacinths and watercress; some also hold fish. In a clarifier, solids settle to the bottom for removal. The remaining liquid flows through a "biofilter" of plants such as bulrushes and cattails.