SAMUELI SCHOOL OF ENGINEERING
UNIVERSITY of CALIFORNIA · IRVINE
Department of Civil and Environmental Engineering

ENVIRONMENTAL ENGINEERING SEMINAR SERIES

FRIDAY, FEBRUARY 14TH FROM 1:30PM-2:20PM

MCDONNELL DOUGLAS AUDITORIUM (MDEA)

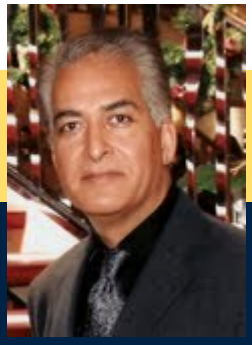
A New Solution for an Old-Age Problem: TIRE as a Biosolids Management Technique and a Renewable Energy Resource

Presented By: Mr. Omar Moghaddam

Division Manager, Regulatory Affairs
Los Angeles Bureau of Sanitation

Abstract:

The Terminal Island Renewable Energy project (**T.I.R.E.**) Project is the nation's first and only full scale application of deep well injection technology to convert wastewater residual solids, biosolids into green power while simultaneously sequestering greenhouse gases. The earth's high temperature biodegrades the organic compounds to generate methane for producing renewable energy. In 2007, the City of Los Angeles and it partners, GeoEnvironment Technologies, and the U. S. Environmental Protection Agency (US-EPA) embarked on a new innovative technology to manage its biosolids, and while sequestering the residual carbon, convert this organic resource into clean energy by deep well injection and geothermal biodegradation. The T.I.R.E uses depleted subsurface oil and gas formations where the earth's high temperature would biodegrade the organic compounds to generate methane gas that can ultimately be used to produce a safe renewable energy. The TIRE project was a five-year demonstration project and has been in operation for over 6 years. So far, over 250 million gallons of bio-slurry which includes wastewater by-products such as brine, treated effluent, digested sludge, and biosolids have been successfully injected. A monitoring system provides real-time data on the subsurface activities, including seismic, pressure, and temperature. There are the environmental benefits that come from the local subsurface anaerobic treatment and sterilization of biosolids in a confined environment. The local management of the residuals, biodegradation of biosolids and brine as a slurry injectate, and carbon dioxide, a greenhouse gas, that is sequestered. Also other air contaminants (i.e. NOx, CO, PM2.5, VOCs) associated with the truck traffic are reduced and eliminated. The T.I.R.E. project provides an innovative solution to an environmental challenge, while simultaneously providing economic and environmental benefits. The project outcomes are a diversified biosolids management program that saves money while producing positive environmental results. The project improves air quality, protects water quality, and reduces the greenhouse gases. In '2014, TIRE project will be expanded with two injection systems, while deeper geo formations will also be explored.



Mr. Moghaddam has over 30 years of experience in management, operations, R&D, permitting, and regulatory compliance of water/ wastewater, renewable energy, sustainability, biomass and biogas-to-energy conversion and capital projects, chemical and refinery processes; climate change and greenhouse gases' inventories and modeling; air quality and biosolids management, and environmental regulatory and legislative affairs.

-30 years with the City of Los Angeles

-Currently: Director of Regulatory Affairs, City of Los Angeles Bureau of Sanitation

Formerly:

-Division Manager of Energy and Applied Research

-Senior Operations Manager at Hyperion Energy Recovery System

-Senior Air Quality Manager

-Senior Energy & Utility Manager

-Resource Development Engineer at LADWP

Next Week's Seminar (Friday, February 21st)

Kelly Sanders, Ph.D.
University of Southern California