

# **Sustainable Remediation for the State's Petroleum Cleanup Program**

By Jim Clark

The most accepted definition of Sustainability , "Meeting the needs of the present without compromising the ability of future generations to meet their needs" first appeared in the Brundtland Report at the 1987 United Nations Conference. Sustainability must be in harmony with three very important elements: financial, social and environmental responsibilities. How can sustainability be related to the petroleum cleanup program?

The main types of remediation for petroleum cleanup program sites are thermal treatment and landfill disposal which are source removal methods; and chemical oxidation and air sparging, both non source removal methods. Let's see how these four remediation types fit into our three sustainability responsibilities - financial, social and environmental.

## **Financial**

A January 2010 Article in the Florida Specifier entitled "Cost Comparison: Green remediation versus air sparge systems" used an example of 7500 cubic square feet (roughly 389 tons) in North Central Florida to be remediated. A cost comparison was done between air sparging and chemical oxidation:

<b>Method:</b>	<b>Air Sparging</b>	<b>ChemOx</b>
<b>Cost:</b>	\$440,000	\$160,000
<b>Time:</b>	5 years	6 months

In a Letter to the Editor in the February 2010 Florida Specifier, thermal treatment was compared air sparging and chemical oxidation. The cost and time savings were tremendous:

<b>Method:</b>	Air Sparging	ChemOx	Thermal Treatment
<b>Cost:</b>	\$440,000	\$160,000	\$26,787
<b>Time:</b>	5 years	6 months	Immediate

If thermal treatment is used as the primary remediation at Florida Department of Environmental Protection petroleum cleanup sites, at a minimum, site remediation in a year would double and the cost savings would be 5 fold. Also by using thermal treatment FDEP would not have to manage old air sparging/chem ox systems, nor absorb the expense of getting only pennies on the dollar when selling the used equipment.

According to the "Preapproval Program Guidance for Technical and Cost Justification for Contaminated Source Removal" (February 2007) there is a 25% cost effectiveness for source removal. It has been the DEP's general experience that soil source removal as a site remediation strategy has a higher success rate at achieving cleanup target levels in the time frame and cost anticipated than intensity remediation methods.

## Social

The creation of the Inland Pollution Trust Fund was to protect Florida's drinking waters for the health and safety of its citizens. Over 90% of our drinking water comes from underground sources.

It is the duty of DEP to keep this trust fund viable. This can be accomplished by choosing the quickest and most cost-effective remediation, which has been shown to be source removal. The quickness of thermal treatment versus chemical oxidation or air sparging means the land can be reused immediately. This is a huge win for the property owners trying to manage their businesses, obtain bank funding or trying to sell their property.

Another social benefit of thermal treatment is keeping the DEP projects within the state. Per the "Source Removal Quote/Summary Form Instructions"

definitions: Disposal of Impacted Soil (landfill)-Includes all costs associated with the proper disposal of petroleum impacted soil at a landfill meeting Chapter 62-701 permitting requirements; and Disposal of Impacted Soil (thermal treatment) includes all costs associated with the proper disposal of petroleum impacted soil at a thermal treatment facility meeting Chapter 62-713 permitting requirements.

Allowing DEP petroleum contaminated soils to go to other states which do not meet the more stringent 701 and 713's imposes a tremendous social impact on Florida.

First, it involves the loss of jobs in the State of Florida. Second, it involves the loss of tax revenues which might be acquired from equipment rentals, permit taxes, salary taxes, etc. Third, the money for these projects which go out of state is generated by Florida companies and individuals paying taxes on fuel and oil acquired and used here in Florida. Why should we fund other states?

## **Environmental**

Recycling and Going Green are the two big catch phrases being thrown about lately. With thermal treatment, the contaminated soil is cleaned and can either go back to the site or go to the other FDEP, FDOT or industrial/commercial sites. This is true recycling.

Borrow pit soil must follow FDEP's "Preapproval Program Backfill Quality Assurance Procedure" (July 1, 2010). This involves a tremendous amount of legwork and reporting from cleanup contractors on the fill being used. If the fill comes from a permitted 62-713 Thermal Treatment facility, it already meets those stringent requirements.

Some thermal treatment facilities burn fuel oil (used oil) as an energy source. This too is true recycling.

Both of these types of recycling (reuse of the cleanfill and the burning of fuel oil) can give green credits back to the local counties. By the State's edict, The Energy, Climate Change and Economic Security Act of 2008, counties are

responsible to attain 75% recyclability by 2020. Treating and recycling the contaminated soils and the use of fuel oil as an energy source will help certain counties achieve their recycling goal.

Another positive for environmentally treating petroleum contaminated soil is the U.S. Environmental Protection Agency's "A Citizen's Guide to Thermal Desorption" which states thermal desorption can be a faster cleanup method than most. The guide also states thermal desorption has been selected by E.P.A. to clean up 59 Superfund sites.

Finally, here in Florida, thermal treatment of petroleum contaminated soils should be the preferred remediation versus landfill because of the states lithography i.e. sinkholes. "It's not a surprise that sinkholes would occur almost anywhere," said University of South Florida geography Professor Robert Brinkmann, who has studied sinkholes for 20 years.

In summary, of the four types of remediation's trying to fit into our three sustainable categories for the petroleum cleanup program, thermal treatment is by far the most financially, socially, and environmentally responsible. In addition, Thermal Treatment has the added benefit of eliminating the generator's future risk and liability.

*Jim Clark is vice president of Clark Environmental Inc. in Mulberry. He can be reached at [jclark@clarkenvironmental.com](mailto:jclark@clarkenvironmental.com)*