

US EPA ARCHIVE DOCUMENT

BIOREACTOR BENEFITS

PRESENTATION BY

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ANAEROBIC BIOREACTOR LANDFILL *POTENTIAL GOALS AND BENEFITS*

RAPID ORGANIC WASTE STABILIZATION

(almost complete within 5 to 10 years of initializing bioreactor process)

- **Rapid settlement; mostly complete during landfill operation**
- **Increased gas unit yield, total yield and flow rate during active operational period; mostly occurs during landfill operation**
- **Landfill land use possible during landfill operation; remainder within 5 to 10 years of closure**

ANAEROBIC BIOREACTOR LANDFILL POTENTIAL GOALS AND BENEFITS

MAXIMIZATION OF LANDFILL GAS CAPTURE FOR ENERGY PROJECTS

- Significantly increased total gas available within relatively short time period (landfill operating period plus 5 to 10 years after closure) for energy use-provides entrepreneurial opportunities
 - Significant economy of scale advantage and potential increase in total landfill gas extraction efficiency (due to high generation rate enabled over shorter generation period)
 - Greatly increased greenhouse gas reduction from lessened emission and consequent fossil fuel offsets
 - Revenues can help defray landfill gas system from otherwise mandated non-funded environmental costs
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ANAEROBIC BIOREACTOR LANDFILL *POTENTIAL GOALS AND BENEFITS*

LEACHATE TREATMENT AND DISPOSAL

(almost complete stabilization within 5 to 10 years of initializing bioreactor process)

- Low cost partial or complete reduction of organic constituents in leachate
 - Low cost partial removal of some salts and metal by precipitation, chemical transformation, filtration, sorption, etc.
 - Retention of leachate within landfill available up to field capacity significantly reduces or eliminates off-site transport of leachate for treatment and/or disposal
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AEROBIC BIOREACTOR LANDFILL *POTENTIAL GOALS AND BENEFITS*

POST-CLOSURE CARE AND MAINTENANCE REDUCTION

(almost complete stabilization of gas and settlement within 1 to 3 years of closure; almost complete stabilization of leachate within 2 to 4 years of closure)

- After reaching stabilization, minimizes future environmental risk and liability related to gas, settlement and leachate
 - After reaching stabilization, significant reduction in landfill operation and maintenance activities
 - After reaching stabilization, significant reduction in landfill monitoring activities
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AEROBIC BIOREACTOR LANDFILL *POTENTIAL GOALS AND BENEFITS*

RAPID ORGANIC WASTE STABILIZATION

(almost complete within 1 to 3 years of initializing bioreactor process)

- Rapid settlement; mostly complete during landfill operation
 - Increased gas unit yield, total yield and flow rate during active operational period; mostly occurs during landfill operation; operated to generate mostly carbon dioxide and little if any methane gas
 - Landfill land use possible during landfill operation; remainder within 1 to 3 years of closure
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AEROBIC BIOREACTOR LANDFILL POTENTIAL GOALS AND BENEFITS

LEACHATE TREATMENT AND DISPOSAL

(almost complete stabilization within 2 to 4 years of initializing bioreactor process)

- Low cost partial or complete reduction of organic constituents in leachate
 - Low cost partial removal of some salts and metal by precipitation, chemical transformation, filtration, sorption, etc.
 - Retention of leachate within landfill available up to field capacity significantly reduces or eliminates off-site transport of leachate for treatment and/or disposal
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