GAS COLLECTION FROM BIOREACTOR LANDFILLS

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INTRODUCTION

- Gas Collection Challenges
- Gas Collection Options
- Regulatory Issues
GAS COLLECTION CHALLENGES

- Higher Gas Temperatures
- Higher Gas Production Rate (more gas more quickly)
- Higher Liquid Levels
Drill Cuttings from gas well with temps > 150º F
LEACHATE
FILLED
EXTRACTION
TRENCH
GAS PRESSURE
GAS COLLECTION OPTIONS

- Vertical Wells
- Horizontal Collectors
- Interconnection with leachate system
- Common Conduit - HYEX® System
DUAL CONDUIT

- Common trench or piping for gas collection and liquids addition
- HYEX® System uses common carrier drain pipe for separate liquid injection and gas collection pipes.
- Demonstration at Ste. Sophie Landfill, Quebec and Fauquier County, VA
Interior of HYEX reinforced landfill conduit; 12 inch ID
Terminal end of HYEX conduit with liquid and gas lateral lines and optional CCTV insertion lateral.
SYSTEM MODIFICATIONS

- Model gas generation with higher k value
- Increase header pipe sizes accordingly
  - More flow
  - More settlement
- Larger well pipe diameter for pumping
- High temperature materials for wells - CPVC, Fiberglas
OTHER TECHNIQUES

- Emissions control via biocovers
  - Compost cover material
  - Oxidizes methane as gas passes through
  - Aerobic reaction
  - EREF Funded research ongoing at Outer Loop Landfill
MACT RULE APPLICABILITY

- NSPS sites with >50Mg NMOC
- Major Source or co-located with major source
- Additional requirements for bioreactors, defined as taking liquids besides leachate and achieving moisture content of 40%
MACT RULE REQUIREMENTS

- New Sources (after 11/7/2000)
  - Install gas collection system prior to liquid addition.
  - Start collecting gas within 180 days of liquid addition OR
  - Within 180 days of reaching 40% moisture content.
MACT RULE (CONT.)

- **Existing Sources**
  - If already adding liquids, install gas collection system within 3 years of 1/16/2003.
  - If not, install gas system before adding liquids.
  - Start collecting gas within 180 days of liquid addition or achieving moisture content of 40%
MACT Rule (cont.)

- Prepare and maintain a SSM plan
- Comply with other NSPS requirements
- Extend gas collection into new cell or area of bioreactor before initiating liquids injection.