

US EPA ARCHIVE DOCUMENT

# Achieving the Potential of Bioreactor Landfills

The Solid Waste Association  
of North America

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# The Solid Waste Manager's Guide to the Bioreactor Landfill

Prepared by the  
**SWANA Applied Research  
Foundation**

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Available from the SWANA Store

[www.swana.org](http://www.swana.org)

# Manager's Guide

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# Potential Benefits of Bioreactor Landfills

- ◆ Accelerated Waste Degradation
  - ◆ Reduced Long Term Risks
    - ◆ Extended Landfill Life
- ◆ Reduced Need for New Landfills
- ◆ More Efficient LFG Collection
  - ◆ More Economical Leachate Treatment



# Potential Drawbacks and Risks

- ◆ **Potential Increased Gas Emissions**
- ◆ **Additional Costs**
- ◆ **Odors**
- ◆ **Leachate Seeps**
- ◆ **Side Slope Instability**
- ◆ **Potential for Fires**
- ◆ **Water Logging**



# The Goal of R&D Efforts

- ◆ To achieve the potential benefits of bioreactor landfills while minimizing and controlling the drawbacks and risks.



# **Bioreactor Technology Issues**

- **Water Distribution and Recirculation**
- **Alternative Daily and Intermediate Covers**
- **Landfill Gas Control**
- **Landfill Stability**
- **Waste Preprocessing**
- **Alternative Final Caps**
- **Stabilization End Point**



# Regulatory Barriers to Bioreactor Landfills

- **Subtitle D Dry Tomb Regulatory Philosophy**
- **Liquid Restrictions**
- **Timing for Placement of Final Cap**



# Overcoming the Regulatory Barriers to Bioreactor Landfills

- **Recognizing Bioreactors in Federal Regulations**
- **NESHAPS Definition and Early Gas Monitoring Requirements**
- **Continue Project XL**
- **Allow States to Issue RD&D Permits**

# **Certification of Designers and Operators of Bioreactor Landfills**

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- **A new and complex technology**
- **Need to assure competent designers and operators**
- **Certification of designers and operators can help assure competence**
- **SWANA currently provides certification in seven disciplines**

# Certification of Designers and Operators of Bioreactor Landfills

- **Certification: individuals with necessary experience and education demonstrate competence by passing a certification exam.**
- **Exam tests for necessary knowledge skills and abilities**
- **SWANA is willing to take the lead in developing a bioreactor certification**

# Composting and Bioreactor Landfills



- **Are complimentary components of integrated MSW systems**
- **Composting of clean source separated organic wastes should be encouraged**
- **Current composting level is only 5%**
- **Bioreactor landfills hold promise for better management of those wastes that are not or will not be composted**

# Conclusions

- **Bioreactor landfills hold the potential for significantly improving SWM**
- **Technology issues need to be addressed to maximize benefits and reduce drawbacks and risks**
- **RD&D should be encouraged and promoted by Federal and State Agencies**



# For More Information

- **SWANA 26th Annual Landfill Gas Symposium, Tampa, FL. March 24-27, 2003**
- **SWANA 8th Annual Landfill Symposium and SW Managers Conference, Atlantic City, NJ, June 17-19, 2003**
- **[www.swana.org](http://www.swana.org)**

