REGULATIONS

SOLID WASTE

- Florida has an EPA-approved permitting program for Subtitle D landfills
- Chapter 62-701, Florida Administrative Code

COMPOSITE LINERS

- Upper Component - 60-mil HDPE
- Lower Component -

Minimum Thickness of Lower Component of Composite Liner (in feet)

Maximum Design Hydraulic Head (inches)	Maximum Hydraulic Conductivity (cm/sec)		
	1×10^{-7}	5×10^{-8}	1×10^{-8}
1	2.0	1.0	1.0
6	2.5	1.5	1.0
12	3.0	2.0	1.0

DOUBLE LINERS

- Upper & lower liners – 60 mil HDPE
- Maximum Hydraulic Head on top liner – one foot
- Maximum Hydraulic Head on bottom liner – one inch
- Leak detection layer may not flood
- Sub-base soils - maximum hydraulic conductivity of 1×10^{-5} cm/sec
- Geosynthetic sub-base allowable with a maximum hydraulic conductivity of 1×10^{-7} cm/sec

LIQUIDS RESTRICTIONS

- Non-containerized liquid waste shall not be placed in solid waste disposal units which accept household waste or construction and demolition debris for disposal unless:
  - 1. The waste is household waste other than septic waste; or
  - 2. The waste is leachate or gas condensate derived from the solid waste disposal unit, or byproducts of the treatment of such leachate or gas condensate, and the solid waste disposal unit is lined and has a leachate collection system.

GAS MANAGEMENT

- Landfills shall have a gas management system designed to prevent explosions and fires, and to minimize off-site odors, lateral migration of gases and damage to vegetation

GAS MANAGEMENT, cont.

- Systems designed to prevent the concentration of combustible gases generated by the landfill from exceeding:
- 25% of the LEL for combustible gases in structures on- or off-site, excluding gas control or recovery components; and
- the LEL for combustible gases at or beyond the landfill property boundary

GAS MANAGEMENT, cont.

- Collect gas from at least the uppermost two-thirds of the filled waste or where the more anaerobic conditions exist
- not interfere with or cause failure of the liner, leachate control systems or final cover
- Compliance with Chapter 62-701, FAC, does not relieve an applicant from compliance with any applicable air requirements of Title V

TEMPORARY CLOSURE

- Placement of final cover over a solid waste disposal unit may be delayed:
  - For the purpose of promoting biological degradation of waste;
  - If additional solid waste will be deposited on the solid waste disposal unit within five years; or
  - If excavation of the waste is planned.

TEMPORARY CLOSURE, cont.

- Approved closure plan with a schedule for closure
- Solid Waste Disposal Unit must have a liner and leachate control system
- Final cover on side slopes of each completed disposal unit which will not receive additional waste or which will not be mined, and all areas visible to the public are closed and landscaped

TEMPORARY CLOSURE, cont.

- No odor or vector problem
- Intermediate cover
- The financial responsibility closure cost estimate takes into account the costs of temporary closure as well as the costs of the final closure
- Delaying placement of final cover will not cause or contribute to any significant increase in leachate escaping into the environment

RELIEF MECHANISMS

- Alternate Procedures
  - Equal Degree of Protection
- Variances – Section 120.542, F.S.
  - Temporary or Permanent
  - Hardship or Unfairness
  - Serve the underlying purpose of the law

RELIEF MECHANISMS, cont.

- Variances – Section 403.201, F.S.
  - Usually limited to statutory requirements
  - No practicable means to comply
  - Schedule to come into compliance
  - Two-year duration, but may be renewed if needed

AIR RULES

- Chapter 62-204, FAC
  - 40 CFR Part 60 Subparts Cc and WWW
  - 40 CFR Part 63 Subpart AAAA

AIR, cont.

- Landfill designed to dispose of more than 2.5 million cubic meters must:
  - Install gas collection/emission control system, or
  - Demonstrate that the landfill emits less than 50 megagrams/year of non-methane organic compound, including VOCs & air toxics

AIR, cont.

- Landfill Air Toxics include:
  - Toluene
  - Benzene
  - Xylenes
  - Vinyl Chloride
  - Ethyl Benzene

AIR, cont.

- Emission control may be a flare, or a device which uses the energy content of the gas, such as a boiler or turbine

AIR, cont.

- On January 16, 2003, EPA promulgated National Emission Standards for Municipal Solid Waste Landfills
  - Requires bioreactor landfills to install collection and control systems on an earlier schedule than conventional landfills
  - Requires a reduction in toxic emissions from bioreactor operations at MSW landfills

HOW DO OUR RULES APPLY TO BIOREACTOR LANDFILLS?

- Nowhere in Florida's Solid Waste Rules are there specific requirements for bioreactor landfills, nor do we define the phrase bioreactor landfill
- The Air Rules reference EPA's definition of bioreactor landfills in which liquids other than leachate are added to reach a minimum average moisture content of 40% by weight

SO……..

- Neither the New River Bioreactor Landfill nor Alachua Southwest Landfill is a bioreactor as defined by Florida's rules……..

OUR APPROACH

- Have not used Research, Development & Demonstration Permitting
  - Only issued for one year
- Use a Relief Mechanism if adding a bulk liquid waste
  - Alternate Procedure
  - Variance

SPECIAL CONCERNS

- Impact of added moisture on:
  - Hydraulic Head on Liner
  - Stability Analysis
  - Settlement Analysis
  - Gas System Capacity
  - Leachate System Capacity

SPECIAL CONCERNS

- Bulk Liquid Wastes
  - Chemical Compatibility with Liner
  - Biological Fouling

SPECIAL CONCERNS

- Leachate Seeps
- Leachate Quality
- Effect of Cover Material
- Operational Responsibility

THANK YOU

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Bioreactor Landfills – Regulatory Issues

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Topics Covered

- RD&D
- XL Program

What is Project XL?

Project XL, which stands for "eXcellence and Leadership," is a national pilot program that allows state and local governments, businesses and federal facilities to develop with EPA innovative strategies to test better or more cost-effective ways of achieving environmental and public health protection. In exchange, EPA will issue regulatory, program, policy, or procedural flexibilities to conduct the experiment.

http://www.epa.gov/projectxl/

What is Project XL?

- Produce superior environmental results beyond those that would have been achieved under current and
- reasonably anticipated future regulations or policies;
- produce benefits such as cost savings, paperwork reduction, regulatory flexibility or other types of flexibility that serve as an incentive to both project sponsors and regulators;
- supported by stakeholders;

What is Project XL?

- achieve innovation/pollution prevention;
- produce lessons or data that are transferable to other facilities;
- demonstrate feasibility;
- establish accountability through agreed upon methods of monitoring, reporting, and evaluations; and
- avoid shifting the risk burden, i.e., do not create worker safety or environmental justice problems as a result of the experiment.

Bioreactor XL Projects

- Anne Arundel County Landfill Project (MD)
- Buncombe County Landfill Project (NC)
- Maplewood Landfill and King George County Landfills (VA)
- Yolo County (CA)

XL Issues

- Flexibility from 40CFR 258.20(a)(2) which prohibits leachate recirculation to landfills with alternate composite liner and collection system,
- Flexibility from the RCRA requirement that prohibits application of bulk liquids in municipal solid waste landfills (40CFR Section 258.28.)

R D & D Rules

- Research, Development, and Demonstration Permits for MSW landfills - 40CFRPart 258
- Effective on April 21, 2004
- Gives States with an approved program the ability to issue RD&D permits
- Intended to stimulate development of new technologies
- Three years, with up to three renewals

R D & D Rules

- Variance to criteria in 40CFR Part 258 for new and existing MSWLF units and lateral expansions
  - Run-on control (258.6(a)(1))and Liquids restrictions (258.28(a))
    - Provided LCS designed to maintain less than 30-cm depth of leachate on liner
  - Final cover (Subpart F)
    - Innovative and new methods permitted, provided no groundwater/surface water contamination